

MONSOON ASSEMBLAGES

Drawing Inventory

John Cook



Horizon 2020
European Union funding
for Research & Innovation

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The purpose of this inventory is to describe and navigate the contents of John Cook's drawing and animation archive of work completed during the Monsoon Assemblages Project.

The work is categorised by theme/location, each page includes: a thumbnail example of the work, title, a caption describing its content, file resolution and information, and shorthand data sources and references.

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Website

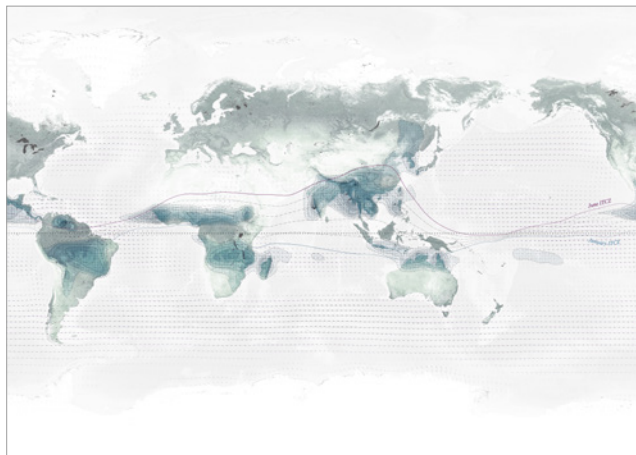
- 47 Monsoon Multiplicities Landing Page Animation
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Venice Biennale

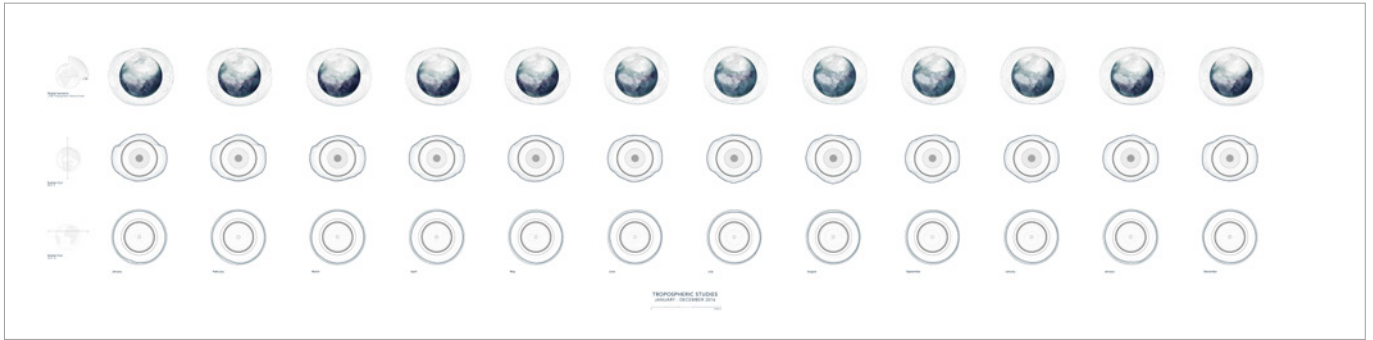
- 49 Between the Dragonfly and the Barometer : Venice Biennale Sneak Peak Video
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Other

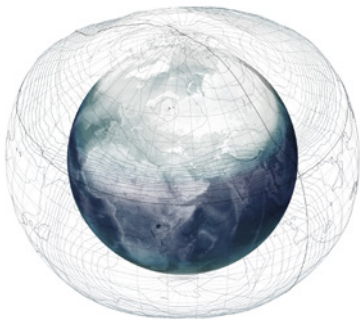
- 51 Monsoon Clocks : 1905 - 2015 (UK, India, Bangladesh, Myanmar)
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Topic	Global Monsoon
Title	Global Map of Monsoonal Regions
Medium	Digital Image
Size	487x350mm @ 300dpi
Qty	1
Author	John Cook
Caption	Global map of monsoonal regions as defined by seasonal rainfall quantities and reversal of high velocity winds.
Sources	Global GIS Data: Natural Earth Data Monsoonal Regions Calculations/Spatial Definition: World Climate Research Programme (WCRP), 'The Global Monsoon Systems', ND, p. 1; ITCZ: Modern Position of the Intertropical Convergence Zone (ITCZ) in July and January: H. Cheng et al., 'The Global Paleomonsoon as see through speleothem records from Asia and thee Americas', <i>Climate Dynamics</i> , 39, 2012, pp. 1047



Panel



Axo

Topic Global Monsoon
Title Tropospheric Deformations : Jan-Dec 2016
Medium Digital Image
Size Panel: 1700x420mm @ 300dpi
 Globe Axos : 175x175mm @ 300dpi
 Globe Section/Plans: 60 x 150mm @ 300dpi
Qty 12
Author John Cook
Caption These exaggerated studies show the variable and deforming nature of the troposphere throughout the year, as weather patterns and pressure differences compress and inflate the lowest layer of the earth's atmosphere.
Sources Tropospheric Height Data: NOAA/NCEP CFSv2 Climate Forecast System
 Aerial Imagery: NASA Blue Marble Imagery



Topic South Asian Monsoon

Title The South Asian Monsoon : Summer Solstice 2016

Medium Digital Image

Size Image: 1000x1000mm @ 300dpi

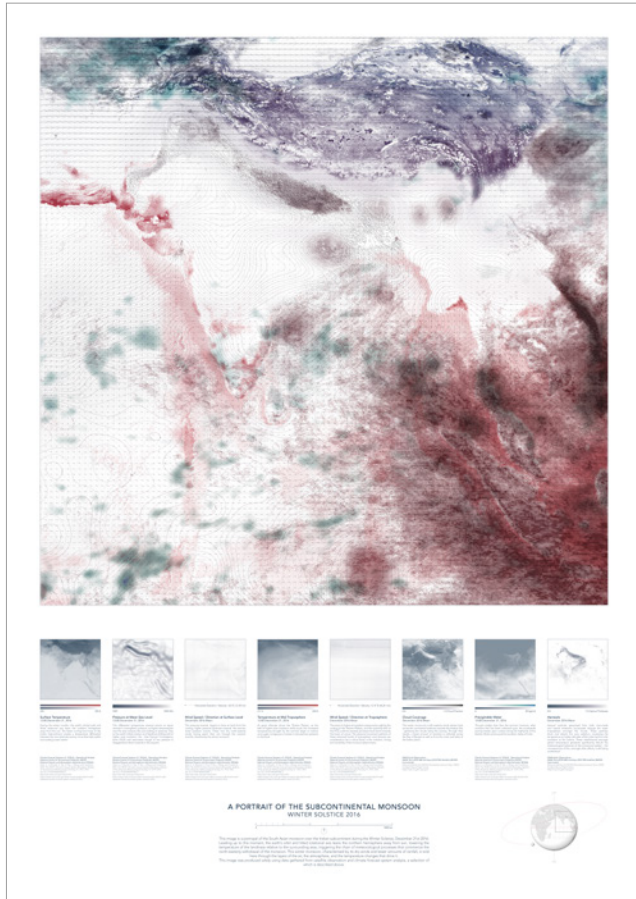
Panel: 840x1188mm (A0) @ 300dpi

Qty 1

Author John Cook

Caption This image is a portrayal of the South Asian monsoon over the Indian subcontinent during the Summer Solstice, June 21st 2016. Leading up to this moment, the earth's orbit and tilted rotational axis leans the northern hemisphere towards the sun, raising the temperature of the landmass relative to the surrounding seas, triggering the chain of meteorological processes that commence the south-westerly summer monsoon. This summer monsoon, characterised by its moisture laden winds and heavy rainfall, is told here through the layers of the ocean and the topographical terrain that influences it. This image was produced using data gathered from satellite and instrumental observation, as well as generated by climate forecast and modelling systems.

Sources Aerial Imagery: NASA Blue Marble Imagery
 Topography + Bathymetry: ETOPO1 Global Relief Model
 Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations
 Observation Instruments: WMO Integrated Global Observing System Stations Catalogue



Topic South Asian Monsoon

Title The South Asian Monsoon : Winter Solstice 2016

Medium Digital Image

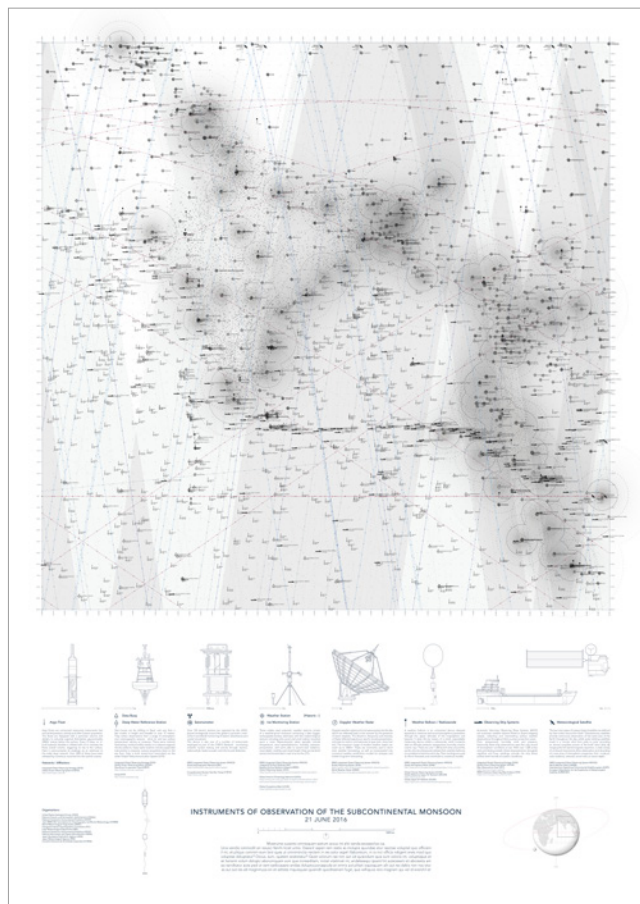
Size Image: 1000x1000mm @ 300dpi
Panel: 840x1188mm (A0) @ 300dpi

Qty 1

Author John Cook

Caption This image is a portrayal of the South Asian monsoon over the Indian subcontinent during the Winter Solstice, December 21st 2016. Leading up to this moment, the earth's orbit and tilted rotational axis leans the northern hemisphere away from sun, lowering the temperature of the landmass relative to the surrounding seas, triggering the chain of meteorological processes that commence the north-easterly withdrawal of the monsoon. This winter monsoon, characterised by its dry winds and lesser amounts of rainfall, is told here through the layers of the air, the atmosphere, and the temperature changes that drive it. This image was produced using data gathered from satellite and instrumental observation, as well as generated by climate forecast and modelling systems.

Sources Aerial Imagery: NASA Blue Marble Imagery
Topography + Bathymetry: ETOPO1 Global Relief Model
Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations
Observation Instruments: WMO Integrated Global Observing System Stations Catalogue



Topic South Asian Monsoon

Title Instruments of Observation of the South Asian Monsoon

Medium Digital Image

Size Image: 1000x1000mm @ 300dpi

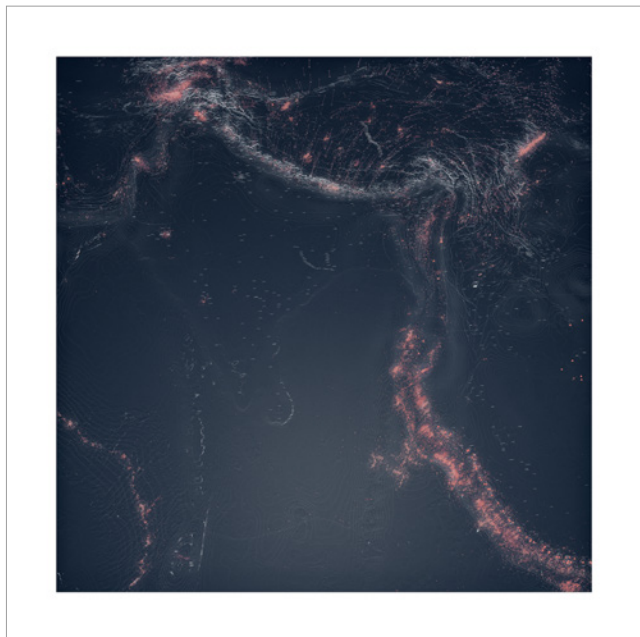
Panel: 840x1188mm (A0) @ 300dpi

Qty 1

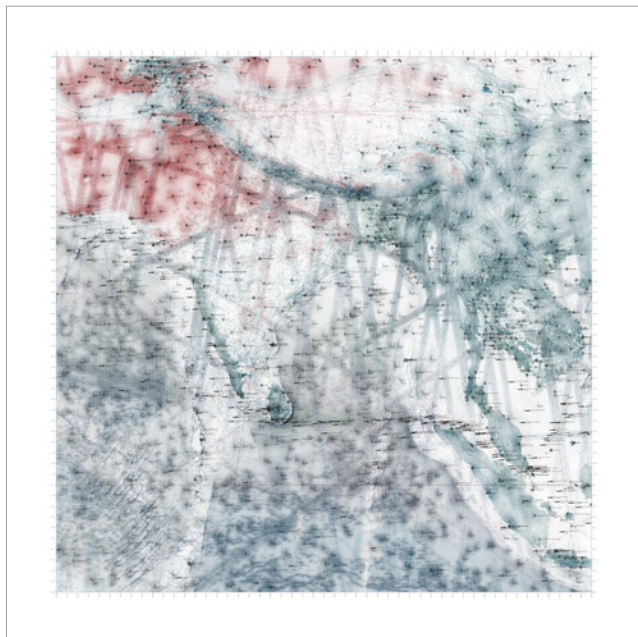
Author John Cook

Caption This image is a portrayal of the South Asian monsoon over the Indian subcontinent during the Summer Solstice, June 21st 2016. It is drawn through the instruments that measure, record and produce climatic data, as well as the relative ranges of their spatial and temporal coverage.

Sources Observation Instruments: WMO Integrated Global Observing System Stations Catalogue



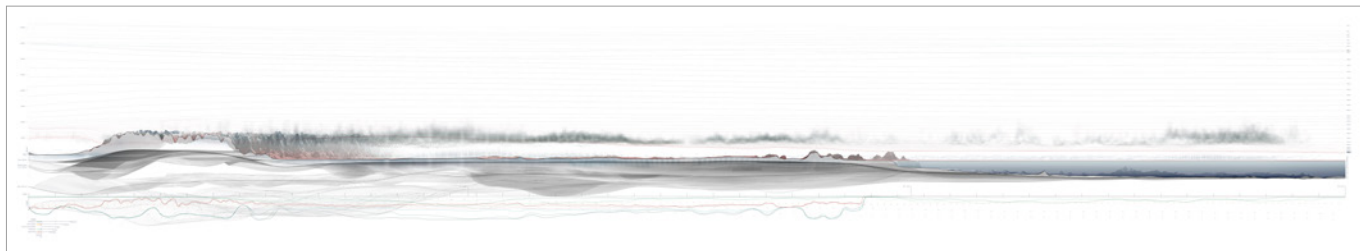
Topic	South Asian Monsoon
Title	The Geology of the South Asian Monsoon
Medium	Digital Image
Size	Image: 1000x1000mm @ 300dpi
Qty	1
Author	John Cook
Caption	A drawing of the crustal, sedimentary and topographic layers of the geology of South and Southeast Asia centred on the Bay of Bengal. The drawing demonstrates the tectonic forces at the boundaries of the subducting Indian plate, from the intense seismic activity along the Sunda trench to the rotational uplift of the Tibetan Plateau.
Sources	Topography + Bathymetry: ETOPO1 Global Relief Model Crustal Layers: Crust 1.0 Model Fault Lines: GEM Global Active Faults Database Seismic Monitoring Stations: WMO Integrated Global Observing System Stations Catalogue Seismic Events [1966-2016]: USGS Earthquake Catalogue Tibetan Plateau Movement: S. Liang et al., 'Three dimensional velocity field of present day crustal motion of the Tibetan Plateau derived from GPS measurements', Journal of Geophysical Research Solid Earth, Vol 118, Issue 10, 2013, pp. 5722-5732



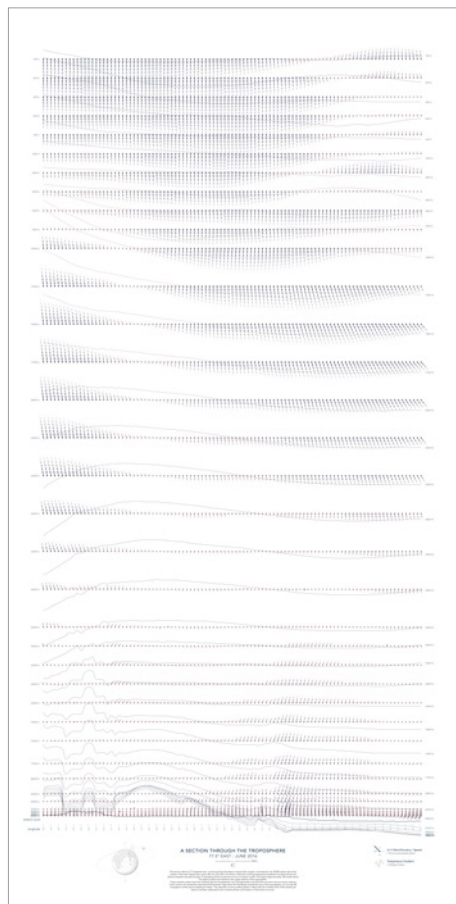
-
- Topic** South Asian Monsoon
- Title** Instruments of Observation of the South Asian Monsoon : Summer Solstice 2016
(Hybrid)
- Medium** Digital Image
- Size** Image: 1000x1000mm @ 300dpi
- Qty** 1
- Author** John Cook
- Caption** Paired drawings of the winter and summer monsoons over the Indian subcontinent, revealing the complex array of observational instruments that contribute to the production of the climatic data used in the drawings. They highlight areas of data-rich certainty as well as the blind spots in the observational machine.
- Sources** Aerial Imagery: NASA Blue Marble Imagery
Topography + Bathymetry: ETOPO1 Global Relief Model
Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations
Observation Instruments: WMO Integrated Global Observing System Stations Catalogue



-
- Topic** South Asian Monsoon
- Title** Instruments of Observation of the South Asian Monsoon : Winter Solstice 2016
(Hybrid)
- Medium** Digital Image
- Size** Image: 1000x1000mm @ 300dpi
- Qty** 1
- Author** John Cook
- Caption** Paired drawings of the winter and summer monsoons over the Indian subcontinent, revealing the complex array of observational instruments that contribute to the production of the climatic data used in the drawings. They highlight areas of data-rich certainty as well as the blind spots in the observational machine.
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Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations
Observation Instruments: WMO Integrated Global Observing System Stations Catalogue



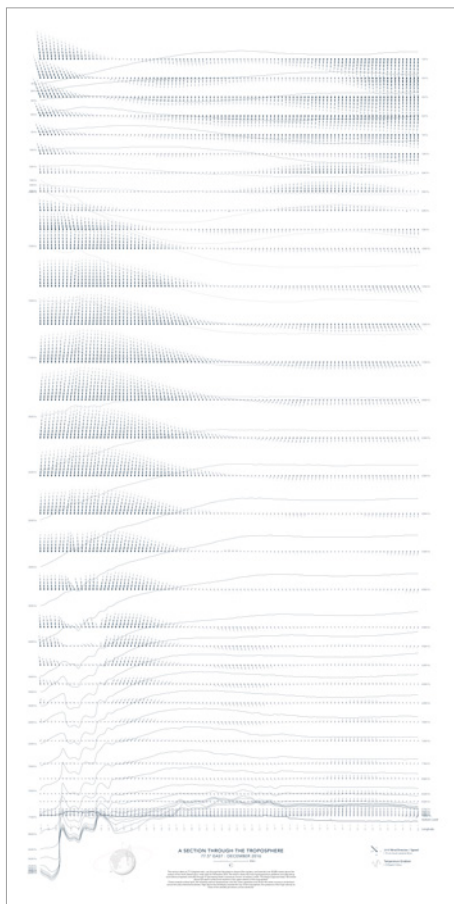
Topic	South Asian Monsoon
Title	Section Through the Indian Subcontinent
Medium	Digital Image
Size	2200x400mm @ 150/300dpi
Qty	1
Author	John Cook
Caption	Read from right to left, this geologic and atmospheric cross-section cuts through India at 77.5° longitude, portraying the gathering and advancement of the summer monsoon from June to August, 2016.
Sources	Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model



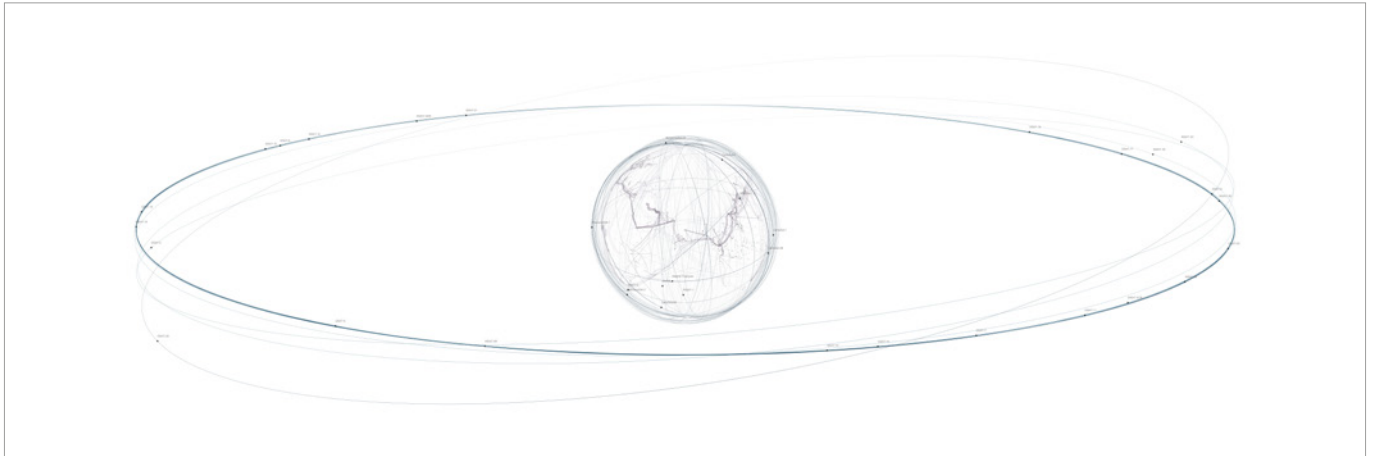
Topic South Asian Monsoon
Title Section Through the Tropopause : Summer Solstice 2016
Medium Digital Image
Size 594x1188mm @ 300dpi
Qty 1
Author John Cook

Caption These sections, cut through the Himalayas and Indian subcontinent at 77.5° longitude, show the evolving temperature gradients and the alternating wind speed directions vertically through 37 isobaric specific levels up to the tropopause, through both the summer and winter monsoonal seasons.

Sources Tropospheric Height Data: NOAA/NCEP CFSv2 Climate Forecast System
 Topography + Bathymetry: ETOPO1 Global Relief Model

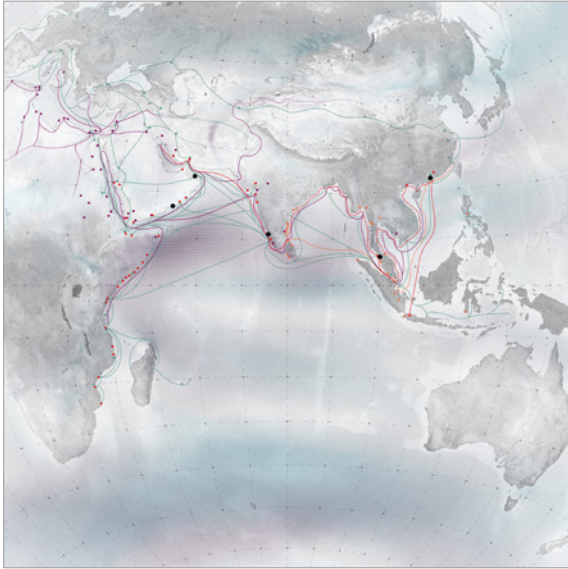


Topic	South Asian Monsoon
Title	Section Through the Tropopause : Winter Solstice 2016
Medium	Digital Image
Size	594x1188mm @ 300dpi
Qty	1
Author	John Cook
Caption	These sections, cut through the Himalayas and Indian subcontinent at 77.5° longitude, show the evolving temperature gradients and the alternating wind speed directions vertically through 37 isobaric specific levels up to the tropopause, through both the summer and winter monsoonal seasons.
Sources	Tropospheric Height Data: NOAA/NCEP CFSv2 Climate Forecast System Topography + Bathymetry: ETOPO1 Global Relief Model



Wide (Landscape)

Topic	Chennai
Title	Chennai Global Connectivity
Medium	Digital Image
Size	Wide (Landscape) : 1525x510mm @ 300 DPI Zoomed (Square) : 510x510mm @ 300 DPI
Qty	2
Author	John Cook
Caption	A view of the globe centred upon Chennai, illustrating its global connectivity through the international submarine data cable network, and India's complex array of low earth orbiting and geostationary communication satellites.
Sources	Indian Satellite + Orbit Details: Government of India, Department of Space, India Space Research Organisation Submarine Data Cables: Gregs Cable Map (2013) Earth Lights Imagery: NASA Blue Marble Imagery



Topic Chennai

Title Pre-Colonial Trading Routes in the Indian Ocean

Medium Digital Image

Size Image: 250x250mm @ 300dpi

Qty 1

Author John Cook

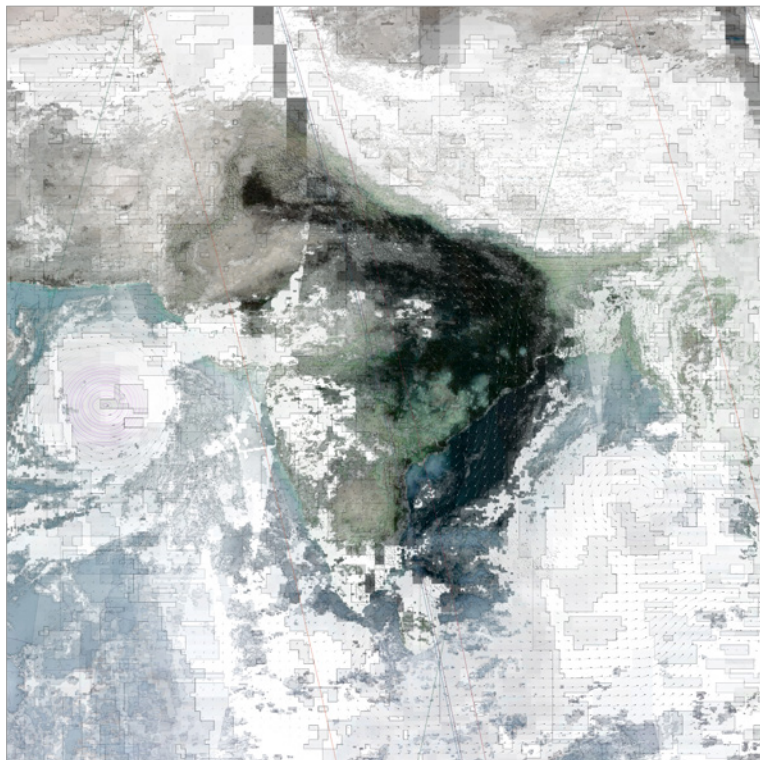
Caption Precolonial Trading Routes in the Indian Ocean.

Sources Aerial Imagery: NASA Blue Marble Imagery
Global GIS Data: Natural Earth Data
Climatic Data: NOAA/NCEP CFSv2 Climate Forecast
Trading Routes: J.D. Fage, An Atlas of African History, London, Africana Publishing Company, 1978.

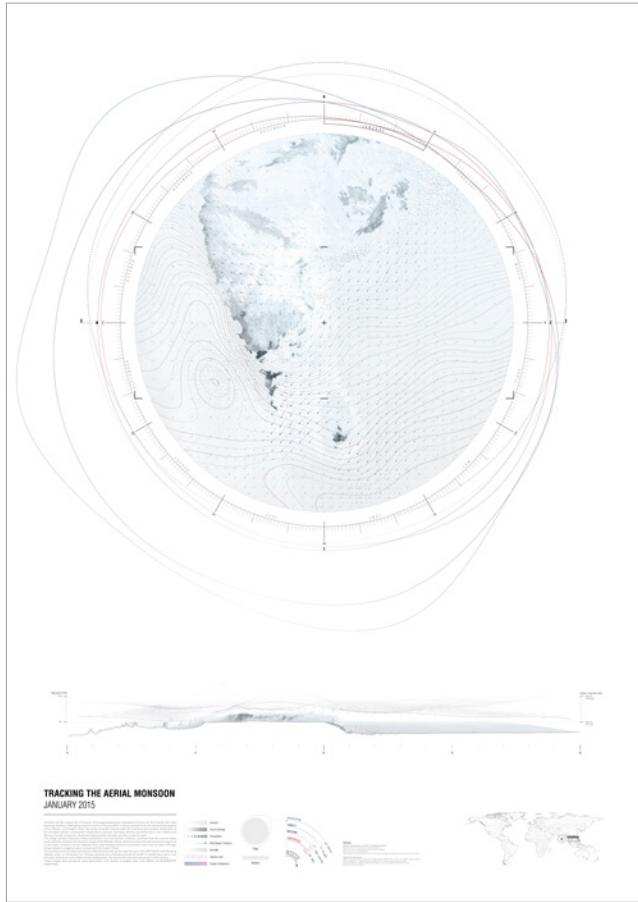


Great Trigonometric Survey Version

Topic	Chennai
Title	Industrial Corridors in India Since 2007
Medium	Digital Image
Size	Image: 400x300mm @ 300dpi
Qty	2 [w/wo labelling and GTS layer]
Author	John Cook
Caption	Since 2007, the Government of India, as part of its 'Make in India' policy has advanced the development of seven industrial corridors tying the country into a vast infrastructural network. The aim of the corridors is to enhance India's competitiveness in manufacturing through the creation of 'world class' infrastructure and reduced logistics costs. The delineation of these corridors shows an uncanny resemblance to the lines of the Great Trigonometrical Survey of India undertaken by the British between 1802 and 1871. This illustrates the ongoing legacy of colonial science on socio-political and economic life in India.
Sources	Local GIS Data: OpenStreetMap Topography: STRM 1-Arc Second Global DEM Historic Maps: 1)1905 Map of Saidapet Taluk, Chingleput District: Survey Office, Madras 2)1909 Map of Madras and Environs: Imperial Gazetteer of India 3)1954 U.S Corps of Engineers Map of Madras & Conjeeveram Madras: AMS ND 44-10 series U502 Conjeeveram: ND 44-14 series U502

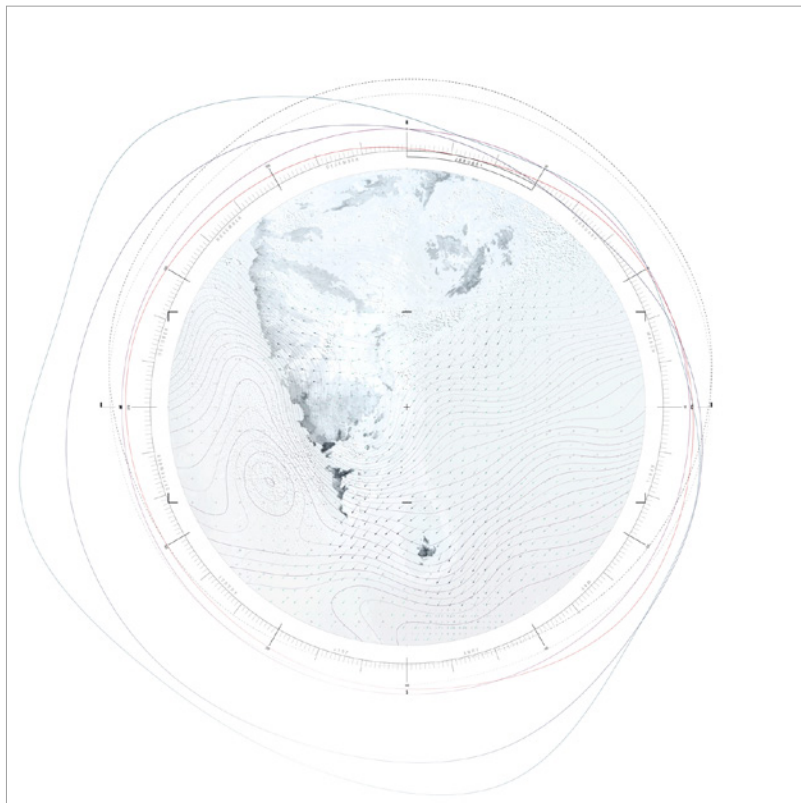


Topic	Chennai
Title	Smog Over Chennai : 04 November 2019
Medium	Digital Image
Size	Image: 400x300mm @ 300dpi
Qty	1
Author	John Cook
Caption	The movement of aerosols over India on November 04, 2019 when an abnormal lull in monsoonal weather patterns dragged smog released from agricultural stubble burning practices in the north down the eastern coastal regions to Chennai. The drawing is an accumulation of aerosol measurement products, with ranging spatial and spectral resolutions; topography and atmospheric pollutants are revealed through satellites' eyes, and their overlapping areas of coverage and blind spots acknowledged.
Sources	Satellite Instrument Imagery: NASA Worldview [NASA TERRA/ AQUA (MODIS), NASA AURA (OMI), NOAA's Suomi NPP (OMPS and VIIRS)] Climatic Data: NOAA/NCEP CFSv2 Climate Forecast + NASA Earth Observations

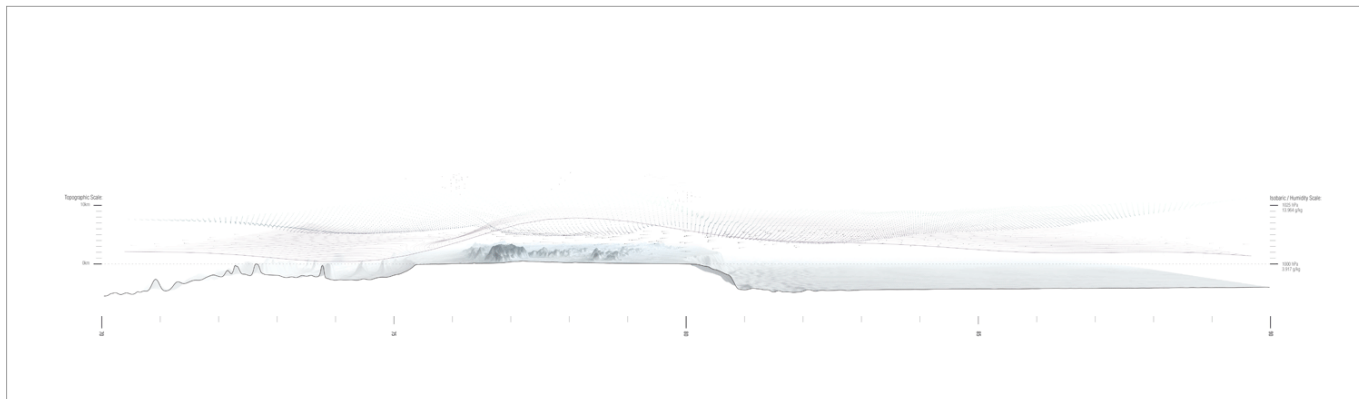


Panels (January 2015)

Topic	Chennai
Title	Atmospheric Conditions Over the Arabian Sea, the Indian Peninsula and Bay of Bengal : 2015 (Monthly Plan/Section Panels)
Medium	Digital Image
Size	Panels: 840x1188mm (A0) @ 300dpi Plans w/o Frame: 500x500mm @ 300dpi Plans w. Frame: 840x840mm @ 300dpi Section w/o Frame: 600x200mm @ 300dpi Section w. Frame: 840x250mm @ 300dpi
Qty	12
Author	John Cook
Caption	Centred over Chennai, these drawings represent the atmospheric conditions over the Arabian Sea, Indian Peninsula and Bay of Bengal during 2015. They communicate the entwined and complex relationships between air temperature, pressure and humidity and the role these play in the creation and driving of winds, moisture, clouds and aerosols.
Sources	Aerial Imagery: NASA Blue Marble Imagery Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Topography + Bathymetry: ETOPO1 Global Relief Model



Topic	Chennai
Title	Atmospheric Conditions Over the Arabian Sea, the Indian Peninsula and Bay of Bengal : 2015 (Plan Animation)
Medium	Animation [MP4 + GIFF]
Size	2500 x 2500 pixels (MP4: 45secs GIFF: 10secs)
Qty	1
Author	John Cook
Caption	Centred over Chennai, this animation represents the atmospheric conditions over the Arabian Sea, Indian Peninsula and Bay of Bengal during 2015. It communicates the entwined and complex relationships between air temperature, pressure and humidity and the role these play in the creation and driving of winds, moisture, clouds and aerosols.
Sources	Aerial Imagery: NASA Blue Marble Imagery Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Topography + Bathymetry: ETOPO1 Global Relief Model



Topic Chennai

Title Atmospheric Conditions Over the Arabian Sea, the Indian Peninsula and Bay of Bengal : 2015
(Sectional Animation)

Medium Animation [MP4 + GIFF]

Size 7678 x 2362 pixels [MP4: 45secs GIFF: 10secs]

Qty 1

Author John Cook

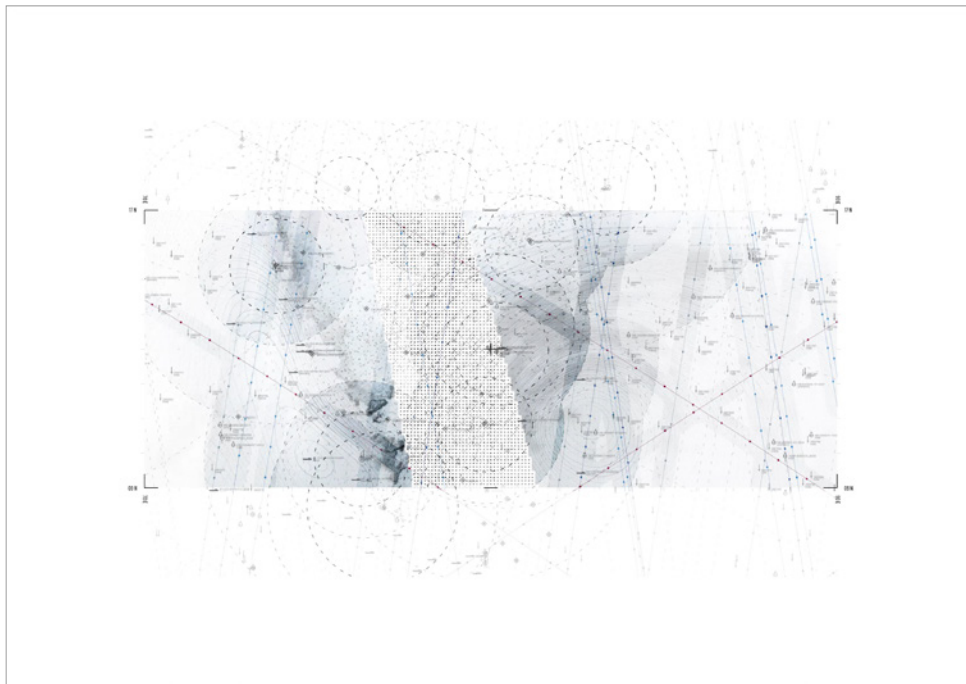
Caption Centred and dissecting Chennai, this sectional animation represents the atmospheric conditions over the Arabian Sea, Indian Peninsula and Bay of Bengal during 2015. They communicate the entwined and complex relationships between air temperature, pressure and humidity and the role these play in the creation and driving of winds, moisture, clouds and aerosols.

Sources Aerial Imagery: NASA Blue Marble Imagery
Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations
Topography + Bathymetry: ETOPO1 Global Relief Model



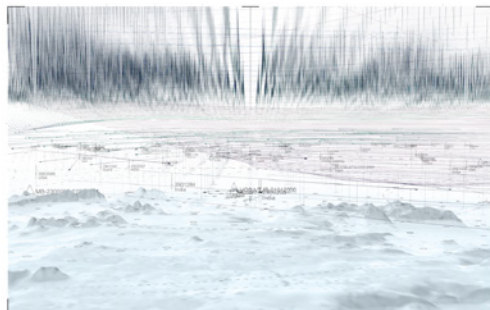
Panels (01 November 2015)

Topic	Chennai
Title	Atmospheric Conditions Over the Arabian Sea, the Indian Peninsula and Bay of Bengal : November 2015
Medium	Digital Image
Size	Panel: 840x594 (A1) @ 300dpi Plan: 600x600mm @ 300dpi Perspective: 420x270mm @ 300dpi
Qty	4
Author	John Cook
Caption	This series of plans and perspectives represent the atmospheric conditions over the Bay of Bengal and South India during November 2015, leading up to the floods of December that year. During early November a deep depression named BOB 03 formed over the Bay of Bengal. It made landfall on the Tamil Nadu coast on 9th November, bringing heavy winds and rains. Towards the end of the month another low pressure system developed, dragging rain and clouds over the city of Chennai, where, once trapped by the raised topography of the Eastern Ghats, serious flooding occurred.
Sources	Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model Observation Instruments: WMO Integrated Global Observing System Stations Catalogue



Screenshot 00:11

Topic	Chennai
Title	Atmospheric Conditions Over the Arabian Sea, the Indian Peninsula and Bay of Bengal : November 2015 (Plan Animation)
Medium	Animation [MP4]
Sizes	Wide Frame: 2880 x 2036 pixels (35 secs) Cropped: 1920 x 1080 pixels (35 secs)
Qty	1
Author	John Cook
Caption	This plan animation represents the atmospheric conditions over the Bay of Bengal and South India during November 2015, leading up to the floods of December that year. During early November a deep depression named BOB 03 formed over the Bay of Bengal. It made landfall on the Tamil Nadu coast on 9th November, bringing heavy winds and rains. Towards the end of the month another low pressure system developed, dragging rain and clouds over the city of Chennai, where, once trapped by the raised topography of the Eastern Ghats, serious flooding occurred.
Sources	Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model Observation Instruments: WMO Integrated Global Observing System Stations Catalogue

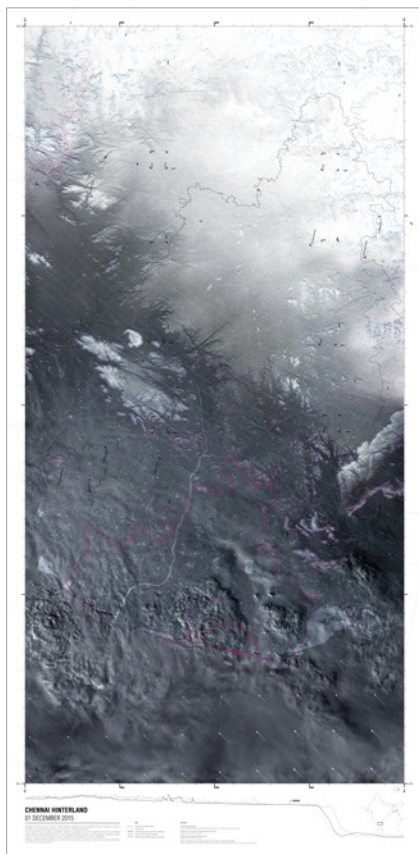


Screenshot 00:11

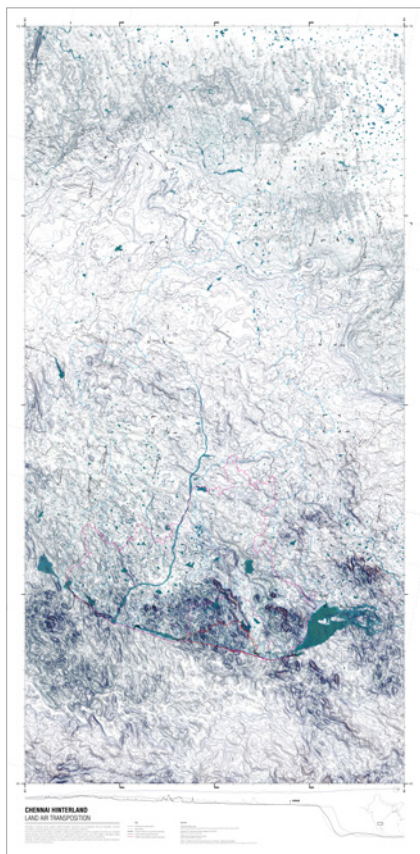
Topic	Chennai
Title	Atmospheric Conditions Over the Arabian Sea, the Indian Peninsula and Bay of Bengal : November 2015 (Perspective Animation)
Medium	Animation [MP4]
Sizes	Wide Frame: 2880 x 2036 pixels (35 secs) Cropped: 1920 x 1080 pixels (35 secs)
Qty	1
Author	John Cook
Caption	This landscape perspective view represents the atmospheric conditions over the Bay of Bengal and South India during November 2015, leading up to the floods of December that year. During early November a deep depression named BOB 03 formed over the Bay of Bengal. It made landfall on the Tamil Nadu coast on 9th November, bringing heavy winds and rains. Towards the end of the month another low pressure system developed, dragging rain and clouds over the city of Chennai, where, once trapped by the raised topography of the Eastern Ghats, serious flooding occurred.
Sources	Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model Observation Instruments: WMO Integrated Global Observing System Stations Catalogue



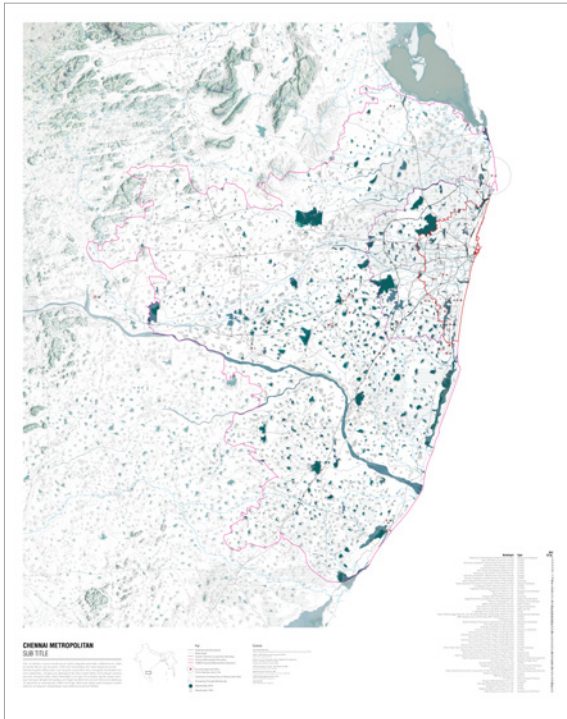
Topic	Chennai
Title	Chennai Hinterland : Hydrological Context
Medium	Digital Image
Size	Image:1000x500mm @ 300dpi Horizontal Panel: 1050x625mm @ 300dpi Vertical Panel: 550x1125mm @ 300dpi
Qty	1
Author	John Cook
Caption	Drawings of Chennai's hinterland, showing the city in relation to the Eastern Ghats, the sedimentary coastal plain and the oceanic shelf.
Sources	Aerial Imagery: Landsat 7-8 Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System Local GIS Data: OpenStreetMap Topography: STRM 1-Arc Second Global DEM Bathymetry: ETOPO1 Global Relief Model



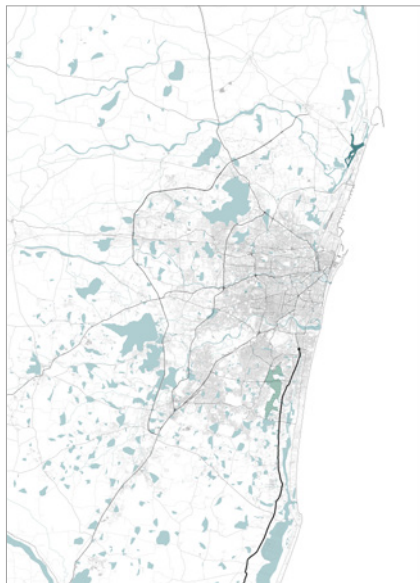
Topic	Chennai
Title	Chennai Hinterland : 01 December 2015
Medium	Digital Image
Size	Image:1000x500mm @ 300dpi Horizontal Panel: 1050x625mm @ 300dpi Vertical Panel: 550x1125mm @ 300dpi
Qty	1
Author	John Cook
Caption	Drawing of Chennai's hinterland on 01 December 2015, when its topography halted moisture-laden monsoonal clouds and the city experienced one of its worst flooding disasters in recent history. The drawing shows the city in relation to the Eastern Ghats, the sedimentary coastal plain and the oceanic shelf.
Sources	Aerial Imagery: Landsat 7-8 + Sentinel 2A (01/12/15) Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System Local GIS Data: OpenStreetMap Topography: STRM 1-Arc Second Global DEM Bathymetry: ETOPO1 Global Relief Model



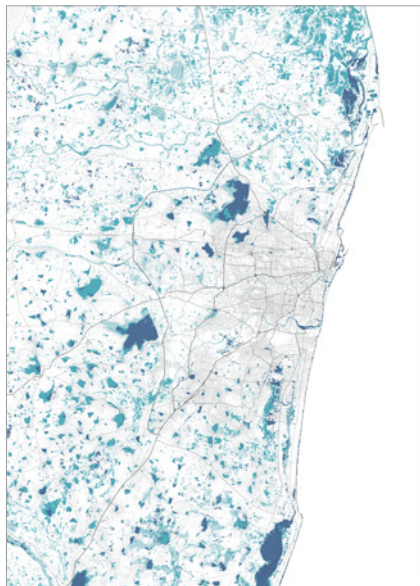
- Topic** Chennai
- Title** Chennai Hinterland : Land Air Transposition
- Medium** Digital Image
- Size** Image:1000x500mm @ 300dpi
Horizontal Panel: 1050x625mm @ 300dpi
Vertical Panel: 550x1125mm @ 300dpi
- Qty** 1
- Author** John Cook
- Caption** Drawing of Chennai's hinterland on 01 December 2015, when its topography halted moisture-laden monsoonal clouds and the city experienced one of its worst flooding disasters in recent history. The drawing shows the city in relation to the Eastern Ghats, the sedimentary coastal plain and the oceanic shelf.
- Sources** Aerial Imagery: Landsat 7-8 + Sentinel 2A (01/12/15)
Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System
Local GIS Data: OpenStreetMap
Topography: STRM 1-Arc Second Global DEM
Bathymetry: ETOPO1 Global Relief Model



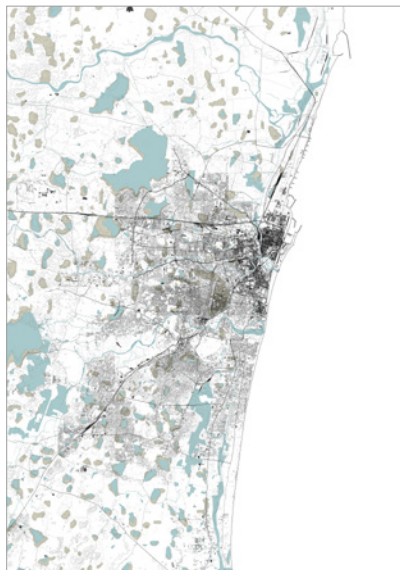
Topic	Chennai
Title	Proposed Chennai Metropolitan Area 2018 : Hydrological Infrastructure
Medium	Digital Image
Size	Image: 700x800mm @ 300dpi Panel: 750x950mm @ 300dpi
Qty	1
Author	John Cook
Caption	Hydrological context of the proposed Chennai Metropolitan Area, showing topographical relief, rivers, tanks, backwaters and coastal lagoons.
Sources	Aerial Imagery: Landsat Local GIS Data: OpenStreetMap Topography: STRM 1-Arc Second Global DEM Watershed areas: HydroSHEDS Historic Tank Maps: - 1954 U.S Corps of Engineers Map of Madras & Conjeeveram - Madras: AMS ND 44-10 series U502 - Conjeeveram :ND 44-14 series U502 Soil Types: 1996 Government of India : Tamil Nadu Soil Map Special Economic Zones in India : Government of India, Ministry of Commerce & Industry



Topic	Chennai
Title	Chennai Metropolitan Area : 2008
Medium	Digital Image
Size	Images: 500x700mm @ 300dpi
Qty	1
Author	John Cook
Caption	The drawing shows the metropolitan area of Chennai, showing its transport infrastructure and present day water bodies. The Pallikaranai Marsh, Ennore Creek and IT Corridor are highlighted.
Sources	Local GIS Data: OpenStreetMap Topography: STRM 1-Arc Second Global DEM Water Surface Flooding: ESA Sentinel-1 Satellite Imagery, Copernicus Sentinel data [acquired 2019], processed by ESA's Sentinel Toolkit, https://scihub.copernicus.eu/



Topic	Chennai
Title	Chennai Metropolitan Area : Winter Monsoon 2015
Medium	Digital Image
Size	Images: 500x700mm @ 300dpi (Qty.3) Panel: 525x825mm @ 300dpi
Qty	1 (Month images available separately)
Author	John Cook
Caption	The drawing shows the Chennai Metropolitan Area and the intense saturation and retention of water in the landscape through the winter monsoon months of September, October and December 2015.
Sources	Local GIS Data: OpenStreetMap Topography: STRM 1-Arc Second Global DEM Water Surface Flooding: ESA Sentinel-1 Satellite Imagery, Copernicus Sentinel data [acquired 2019], processed by ESA's Sentinel Toolkit, https://scihub.copernicus.eu/



2010

Topic	Chennai
Title	Chennai Corporation Area : 1900, 1950, 2010
Medium	Digital Image
Size	Images: 350x500mm @ 300dpi Panels: 350x600mm @ 300dpi
Qty	3
Author	John Cook
Caption	The expansion of the Chennai Corporation Area, showing the Madras Corporation Area in 1900 and 1954 and the Chennai Corporation Area in 2010.
Sources	Local GIS Data: OpenStreetMap Topography: STRM 1-Arc Second Global DEM Historic Maps: 1)1905 Map of Saidapet Taluk, Chingleput District: Survey Office, Madras 2)1909 Map of Madras and Environs: Imperial Gazetteer of India 3)1954 U.S Corps of Engineers Map of Madras & Conjeeveram Madras: AMS ND 44-10 series U502 Conjeeveram: ND 44-14 series U502

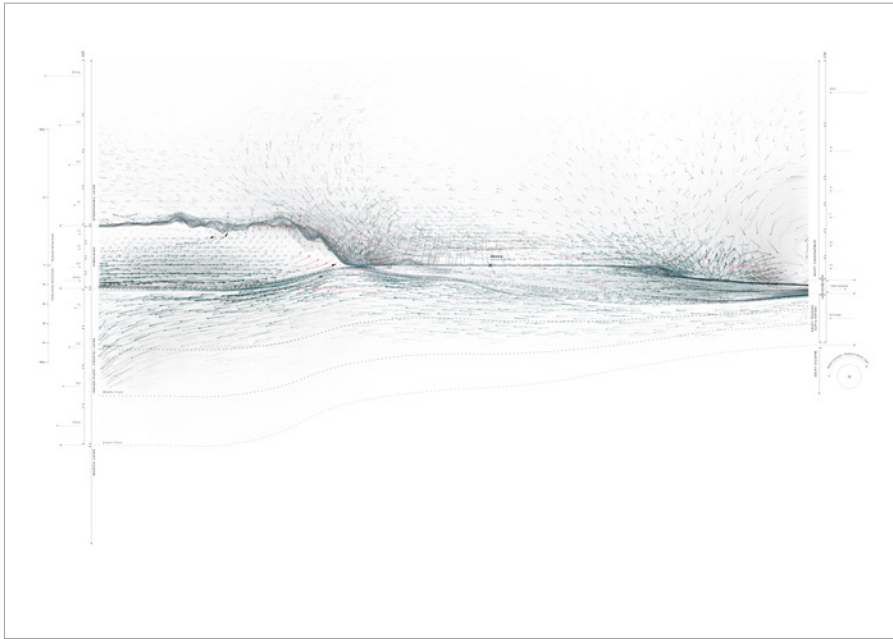
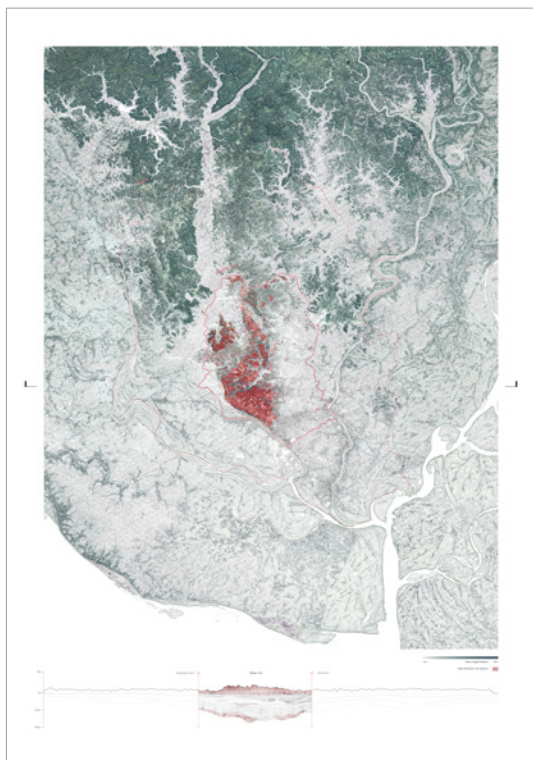
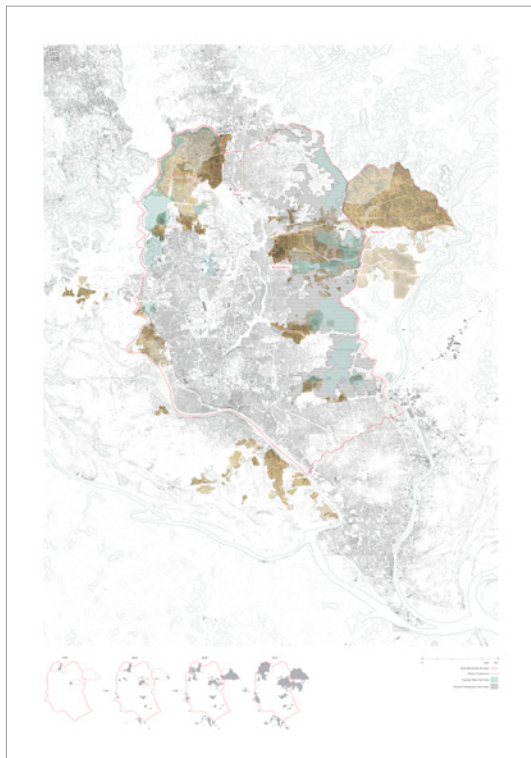


Image with annotation

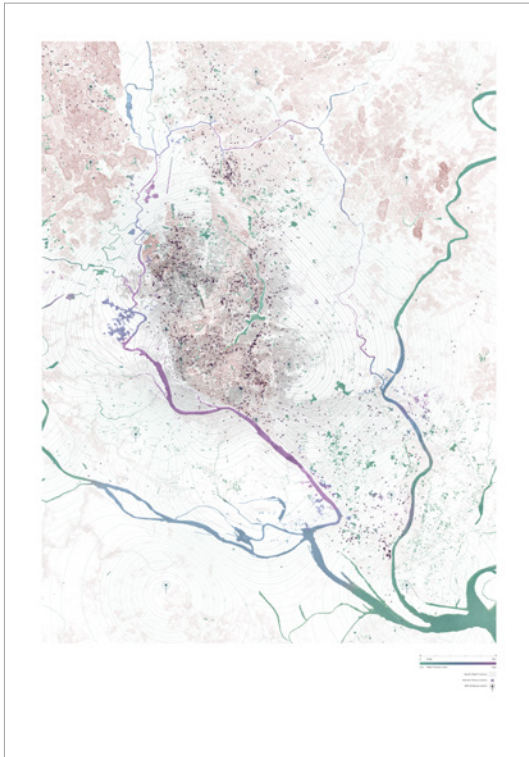
Topic	Dhaka
Title	Monsoonal Bangladesh : Terra-Aqueous Land
Medium	Digital Image
Size	Image: 940x640mm @ 300dpi Panel: 1188x840mm (A0) @ 300dpi
Qty	1
Author	John Cook
Caption	A speculative sectional drawing through Dhaka (90.4125° Lon) simulated using computational fluid dynamics software depicting the complex forces and interactions between tectonic and climatic materials and flows.
Sources	Topography: ETOPO1 Global Relief Model Crustal Layers: Crust 1.0 Model Diagrams: M.P. Searle, 'Generalised Block Diagram South to North Through Nepal and into Tibet' in Colliding Continents: A Geological Exploration of the Himalaya, Karakoram and Tibet, Oxford, Oxford University Press, p. 438.



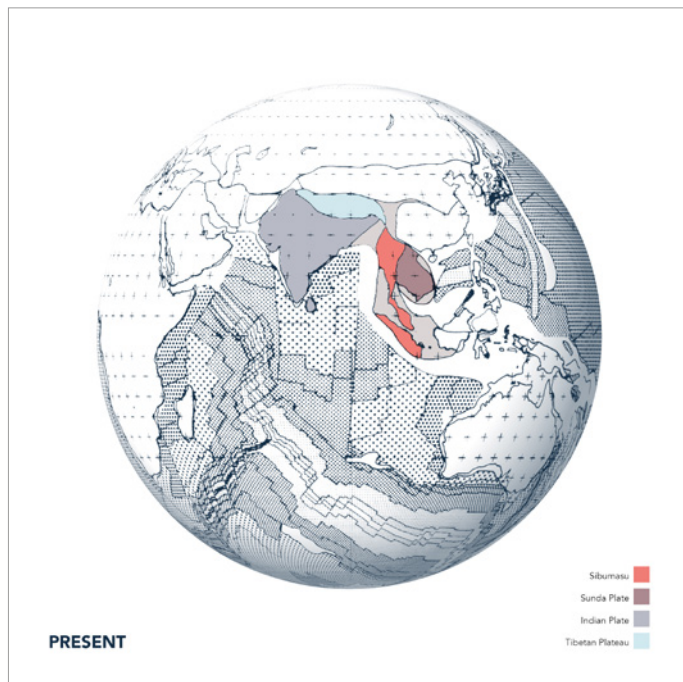
Topic	Dhaka
Title	Dhaka : Topographic Plan and Section
Medium	Digital Image
Size	Plan: 600x800mm @ 300dpi Section: 600x80mm @ 300dpi Panel: 700x1000mm @ 300dpi
Qty	1
Author	John Cook
Caption	Topographic plan and section of Dhaka and the surrounding terrain showing the elevated Madhupur Clay Tract and the subterranean Dupi Tila aquifer.
Sources	Topography: STRM 1-Arc Second Global DEM Aerial Imagery: NASA Blue Marble Imagery Geology: S. Karim et al., 'Geomorphology and Geology of the Dhaka City Corporation Area', International Journal of Astronomy, Astrophysics and Space Science, vol. 6, no. 2, 2019, p. 14 Aquifer Section: M.A. Halim et al., 'Study on Groundwater, Riverwater and Tannery Effluent Quality in Southwestern Dhaka, Bangladesh, JNSST, vol. 5, no. 3, 2011, p 4.



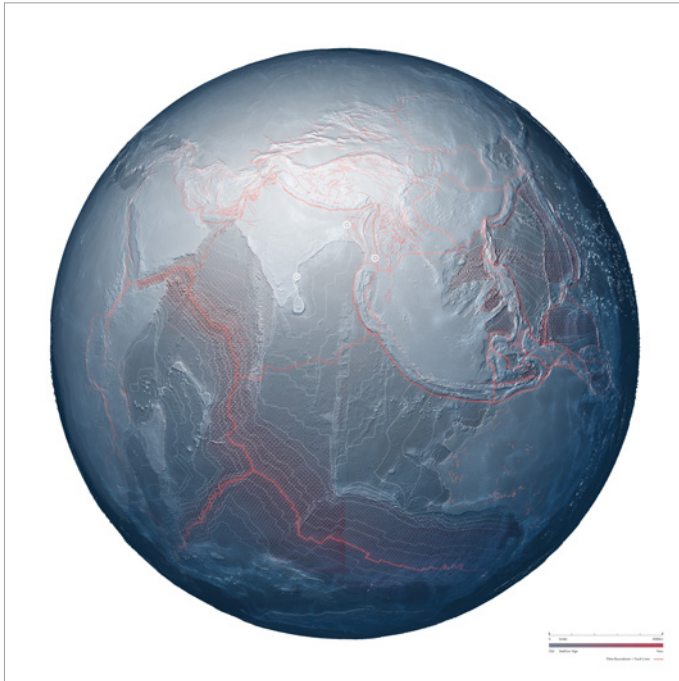
Topic	Dhaka
Title	Urban Expansion of Dhaka : 1994 - 2016
Medium	Digital Image
Size	Plan: 600x800mm @ 300dpi Panel: 700x1000mm @ 300dpi
Qty	1
Author	John Cook
Caption	Dhaka's expansion since 1994 highlighting areas of real estate created by dredging and pumping sand.
Sources	Topography: STRM 1-Arc Second Global DEM Aerial Imagery: Landsat + Google Earth Local GIS Data: OpenStreetMap Water Park + Ecologically Critical Areas: Parliamentary Standing Committee on Ministry of Environment and Forest, Pollution Abatement Strategies for Rivers and Wetlands in and around Dhaka City, 2010, p. 13 – 14.



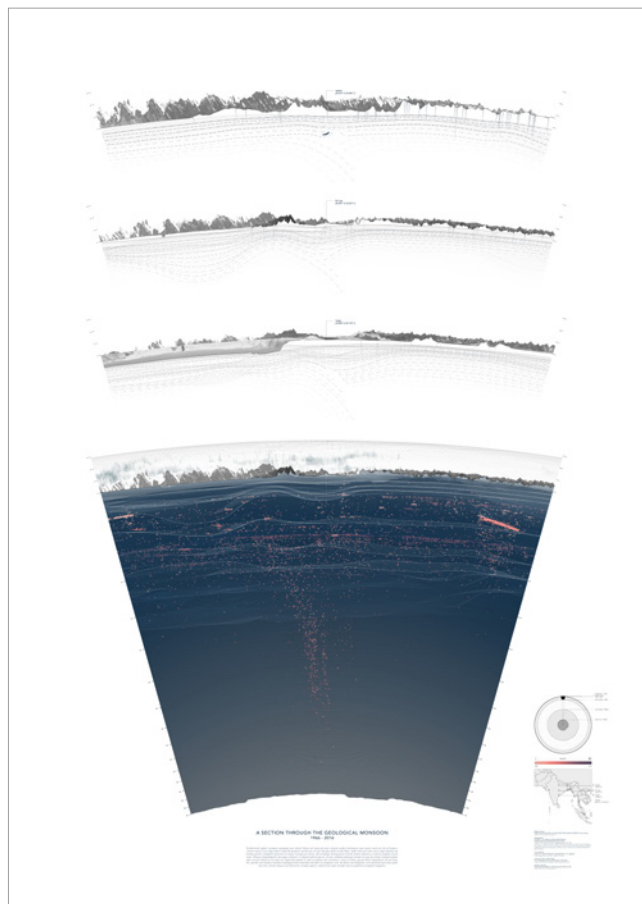
Topic	Dhaka
Title	Dhaka's Garment Industry
Medium	Digital Image
Size	Plan: 600x800mm @ 300dpi Panel: 700x1000mm @ 300dpi
Qty	1
Author	John Cook
Caption	A drawing of Dhaka showing the location of garment factories and their impact on aquifer depletion and river water quality.
Sources	Topography: STRM 1-Arc Second Global DEM Aerial Imagery: Landsat + Google Earth Local GIS Data: OpenStreetMap Bangladesh Garment Factories: Geolocated from NYU Stern School of Business and Human Rights Dataset River Water Quality: P. Restiani, Water Governance Mapping Report: Textile Industry Water Use in Bangladesh, Sweden Textile Water Initiative, Stockholm, Stockholm International Water Institute (SIWI), 2017, p. 32 Groundwater Depth: K.M. Ahmed et al., 'Changes in the Groundwater Regime of Dhaka City: A Historical Perspective', in S.U. Ahmed and g. Rabbani (eds.) Celebration of 400 Years of Capital Dhaka, 2010, p. 10.



Topic	Yangon
Title	The Tectonic History of Myanmar
Medium	Animation [GIF]
Size	GIF: 1500 x 1500 pixels Images (10) : 210 x 210mm @ 300dpi
Qty	1
Author	John Cook
Caption	Animation showing the movement of tectonic plates from 143.8 millions of years ago to the present highlighting those that collided to form present day Myanmar.
Sources	C.R. Scotese, L.M. Ganahan and R.L. Larson, 'Plate Tectonic reconstructions of the Cretaceous and Cenozoic ocean basins', C.R. Scotese and W.W. Sager (eds.), Mesozoic and cenozoic plate reconstructions, Amsterdam, Elsevier, 1989, pp. 27-48.



Topic	Yangon
Title	Geology of the Indian Ocean
Medium	Digital Image
Size	Image: 600x600m @ 300dpi
Qty	1
Author	John Cook
Caption	This drawing shows the tectonic plates, active fault boundaries and subduction zones of the Indian Ocean hemisphere.
Sources	Topography + Bathymetry: ETOPO1 Global Relief Model Crustal Layers: Crust 1.0 Model Fault Lines: GEM Global Active Faults Database



Topic Yangon

Title Geological-Atmospheric Sections Through Myanmar : Yangon, Mount Popa and Hpakant

Medium Digital Image

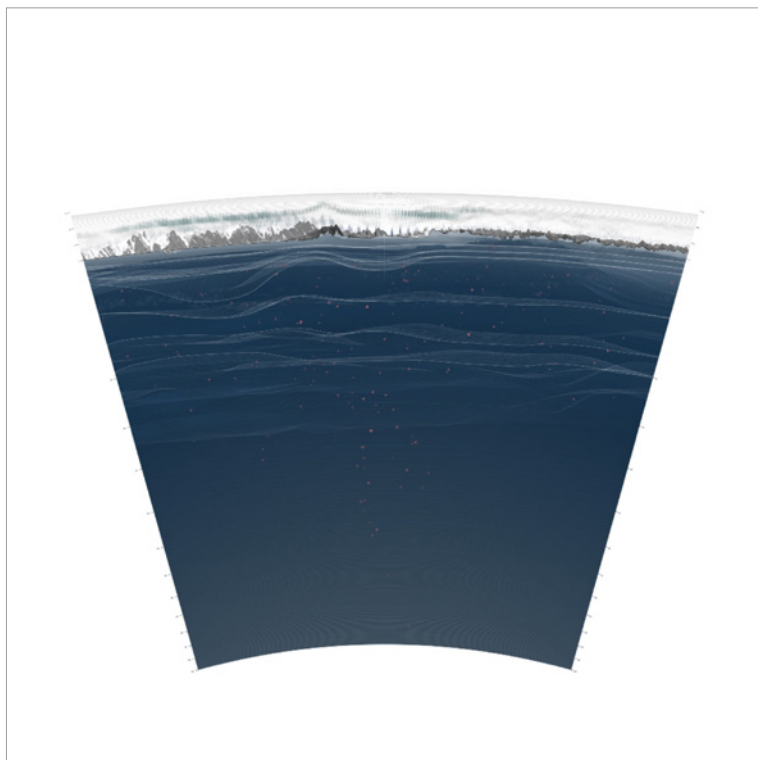
Size Main Section: 1000x1000mm @ 300dpi
 Top Sections: 675 x 150mm @ 300dpi
 Panels: 840x1188mm (A0) @ 300dpi

Qty 1

Author John Cook

Caption These geological-atmospheric sections through Myanmar show seismic events (between 1996 and 2016) and atmospheric activity (2016). They are intended to illustrate the relationship between subterranean activity, topography and atmospheric patterns.

Sources Aerial Imagery: NASA Blue Marble Imagery
 Topography + Bathymetry: ETOPO1 Global Relief Model
 Crustal Layers: Crust 1.0 Model
 Seismic Events [1966-2016]: USGS Earthquake Catalogue
 Climatic Data: NASA Earth Observations



Screenshot 00:20

Topic	Yangon
Title	Geological-Atmospheric Section Through Myanmar
Medium	Animation (MP4)
Size	1000 x 1000 pixels (38 sec)
Qty	1
Author	John Cook
Caption	This geological-atmospheric section through Myanmar shows seismic events (between 1996 and 2016) and atmospheric activity (2016). It is intended to illustrate the relationship between subterranean activity, topography and atmospheric patterns.
Sources	Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model Crustal Layers: Crust 1.0 Model Seismic Events [1966-2016]: USGS Earthquake Catalogue Climatic Data: NASA Earth Observations



Panel

Topic Yangon

Title Historic Centres of Power in Myanmar

Medium Digital Image

Size Image: 400x600mm @ 300dpi
Panel: 450x750mm @ 300dpi

Qty 1

Author John Cook

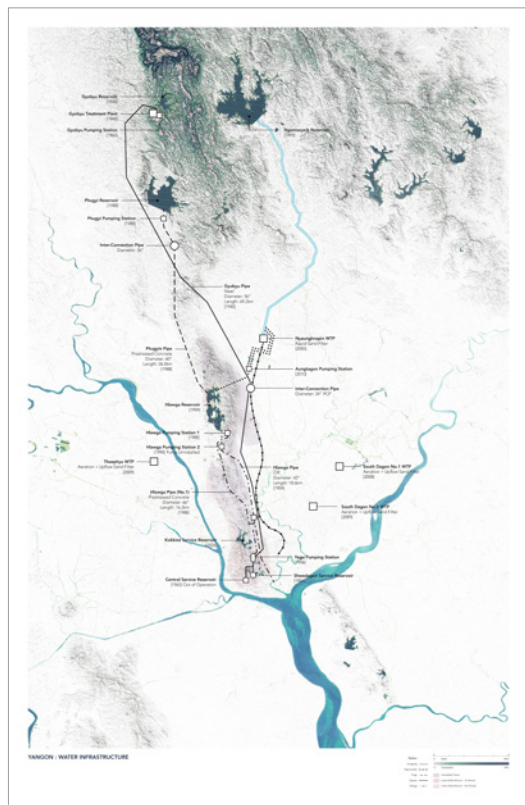
Caption A map of Myanmar showing the relationship between the mountains and highlands formed by its tectonic history, rainfall, and historical centres of power. The Dry Zone in the centre of the country, positioned in the rain shadows of the Arakan Yoma to the west and the Shan Plateau to the east, is clearly visible. It was here that Myanmar's centre of power resided for most of its history.

Sources Climatic Data: NASA Earth Observations
Aerial Imagery: NASA Blue Marble Imagery
Topography + Bathymetry: ETOPO1 Global Relief Model
Crustal Layers: Crust 1.0 Model



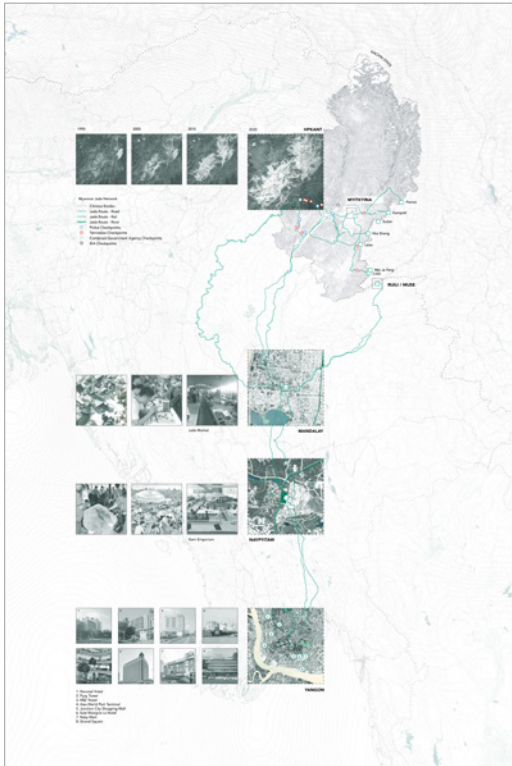
Panel (Large): Yangon 2020

Topic	Yangon
Title	Development of Yangon : 1944, 1987, 2020
Medium	Digital Image
Size	Images: 500x750mm @ 300dpi Panels (Large): 550x850mm @ 300dpi Panels (Small): 450x750mm @ 300dpi
Qty	4
Author	John Cook
Caption	The growth of Yangon from 1944 to 2020, overlaid over its underlying geology. The map shows the relationship between the city and the hard, massive sandstone ridge of late Miocene origins derivation, the alluvial deposits at its base, and the low-lying fluvial sediments of the Ayeyarwady delta to the west and east of the ridge.
Sources	Topography: STRM 1-Arc Second Global DEM Aerial Imagery: Landsat + Google Earth Local GIS Data: OpenStreetMap Geology: Map of the Rangoon Suburban Area in Insien District, 1932. Source: British Library; HIND 1036 Historic Maps: Rangoon Sheets 1 and 2, Third Edition, 1944. Source: British Library C. Wang, B. Hu, S.W. Myint et al. 'Patterns of land change and their potential impacts on land surface temperature change in Yangon, Myanmar', <i>Science of the Total Environment</i> , vol. 643, 2018, p. 742 B.R. Pearn, <i>A History of Rangoon</i> , Rangoon, American Baptist Mission Press, 1939. Source: British Library. H.H. Aung, 'Potential Seismicity of Yangon Region (Geological Approach)', <i>Advances in Geosciences</i> , vol. 26, 2010, pp. 143, 144



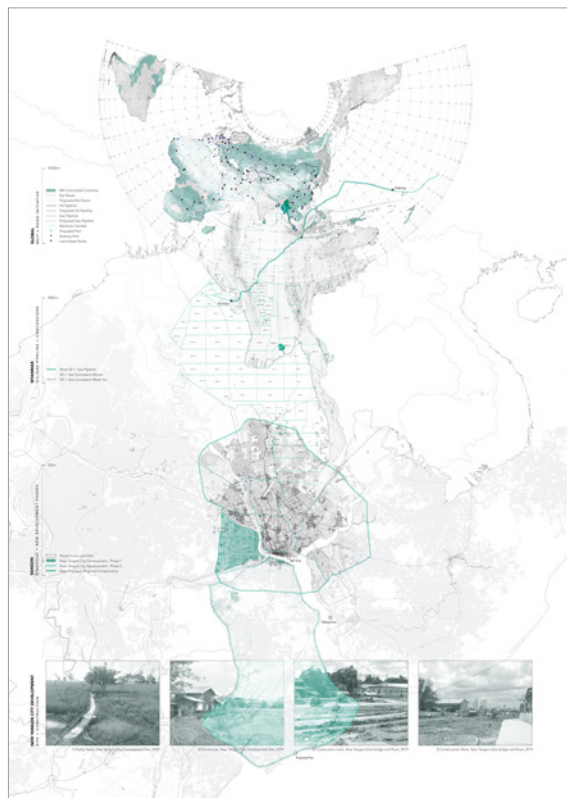
Panel

Topic	Yangon
Title	Yangon Water Infrastructure
Medium	Digital Image
Size	Panel: 650x1000mm @ 300dpi Image: 550 x 750mm @ 300dpi
Qty	1
Author	John Cook
Caption	Map of Yangon's piped water supply system.
Sources	Topography: STRM 1-Arc Second Global DEM Aerial Imagery: Landsat + Google Earth Local GIS Data: OpenStreetMap Geology: Map of the Rangoon Suburban Area in Insien District, 1932. Source: British Library; HIND 1036



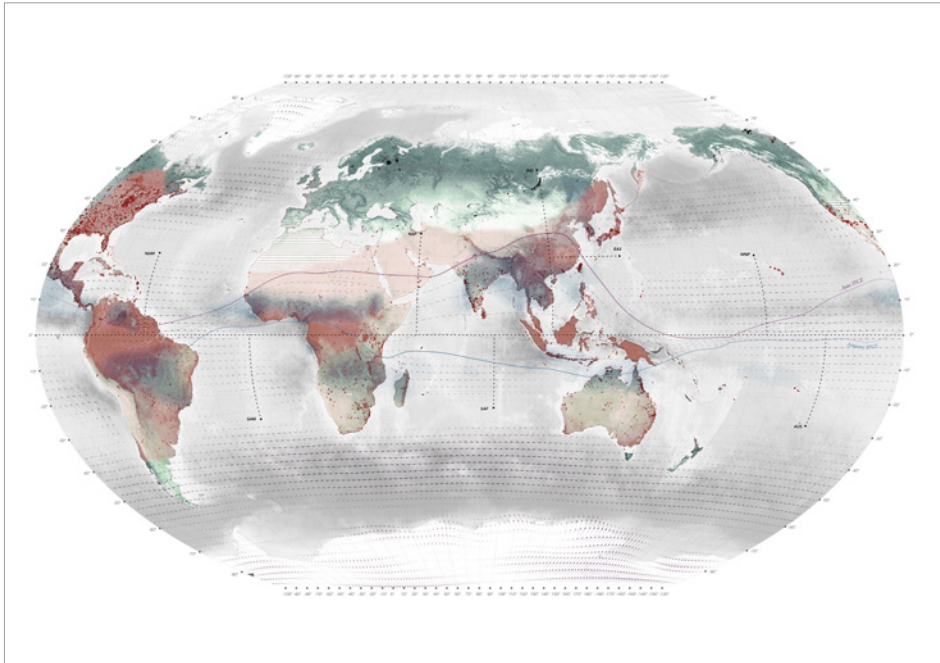
Panel (No Graphs)

Topic	Yangon
Title	Jade Territories, Nodes and Networks in Myanmar
Medium	Digital Image
Size	Panel: 600x900mm @ 300dpi Images: Hpakant Aerials 215x215mm @ 300dpi Images: Mandalay, Naypyitaw + Yangon Real Estate Aerial 250x250mm @ 300dpi
Qty	1
Author	John Cook
Caption	A map of the jade distribution network in Myanmar, from the jade mines in Hpakant in Kachin State, to the Gems Emporium in Naypyidaw and the jade markets in Mandalay and Yangon. The drawing also shows the towns along the Myanmar China border that serve as access points to Chinese markets and the real estate developments. In Yangon, known real estate developments associated with jade derived capital are indicated.
Sources	Aerial Imagery: NASA Blue Marble Imagery Global GIS Data: Natural Earth Data Local GIS Data: OpenStreetMap Topography + Bathymetry: ETOPO1 Global Relief Model Crustal Layers: Crust 1.0 Model Jade Network: Global Witness, Jade: Myanmar's "Big State Secret", London, Global Witness, 2015.



Panel

Topic	Yangon
Title	Chinese Infrastructural Territories : 2020
Medium	Digital Image
Size	Panel: 594x841mm (A1) @ 300dpi Image: Global - Belt + Road Initiative 420 x 297mm (A3) @ 300dpi Image: Myanmar - Oil + Gas pipeline + Concessions 594x841mm (A1) @ 300dpi Image: Yangon - Ringroad + New Development Phases 594x841mm (A1) @ 300dpi
Qty	1
Author	John Cook
Caption	This is a multi-scalar composite drawing tying China's interests from the New Yangon City Development to the China-Myanmar Economic Corridor and China's global Belt and Road Initiative.
Sources	Aerial Imagery: NASA Blue Marble Imagery Global GIS Data: Natural Earth Data Local GIS Data: OpenStreetMap Topography + Bathymetry: ETOPO1 Global Relief Model BRI Countries: Green Belt and Road Initiative Centre BRI Nodes + Networks: Mercator institute for China Studies Oil Pipeline: Shwe Gas Movement; Oil + Gas Blocks: Open Development Myanmar; Oil + Gas Blocks: Open Development Myanmar Yangon Coastal Risk Areas: Climate Central, CoastalDEM, New Yangon, 2050.

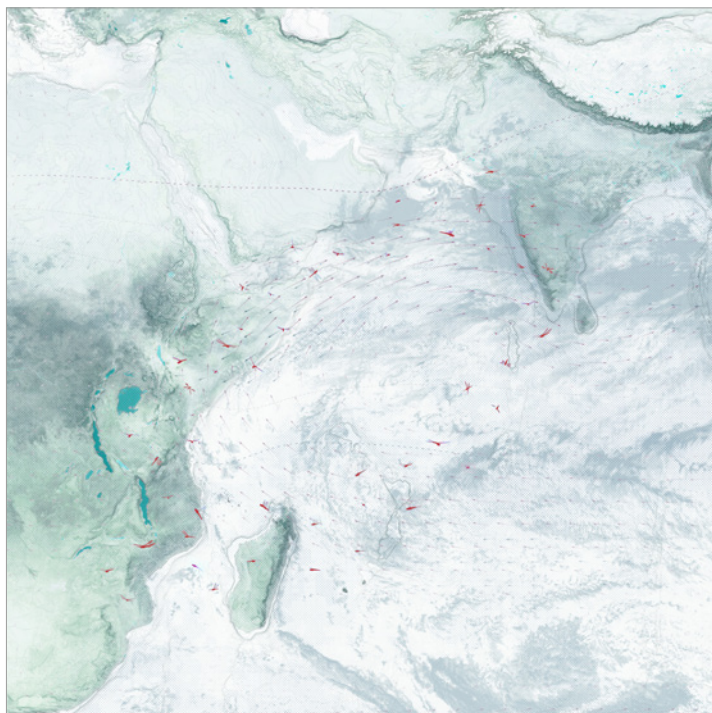


Winkel Tripel Projection

Topic	Globe Skimmer Dragonfly
Title	Global Dispersal of the Globe Skimmer Dragonfly
Medium	Digital Image
Size	Winkel Tripel Projection: 500x350mm @ 300dpi Miller Cylindrical Projection: 500x300 @ 300dpi
Qty	2
Author	John Cook
Caption	Speculative map showing relations between the global dispersal of the Globe Skimmer dragonfly (<i>Pantala flavescens</i>) and the global monsoon system.
Sources	Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model Monsoonal Regions Calculations/Spatial Definition: World Climate Research Programme (WCRP), 'The Global Monsoon Systems', ND, p. 1 ITCZ Positions: Modern Position of the Intertropical Convergence Zone (ITCZ) in July and January: H. Cheng et al., 'The Global Paleomonsoon as seen through speleothem records from Asia and the Americas', <i>Climate Dynamics</i> , 39, 2012, pp. 1047 Dragonfly Sightings: Global Biodiversity Information Facility (GBIF) Dragonfly Territory 2006: A. Raschka, 'Distribution of <i>Pantala flavescens</i> ', Wikipedia, 2006 Dragonfly Territory 2017: J. Tann, 'Distribution of the dragonfly, <i>Pantala flavescens</i> ', Wikipedia, 2017.



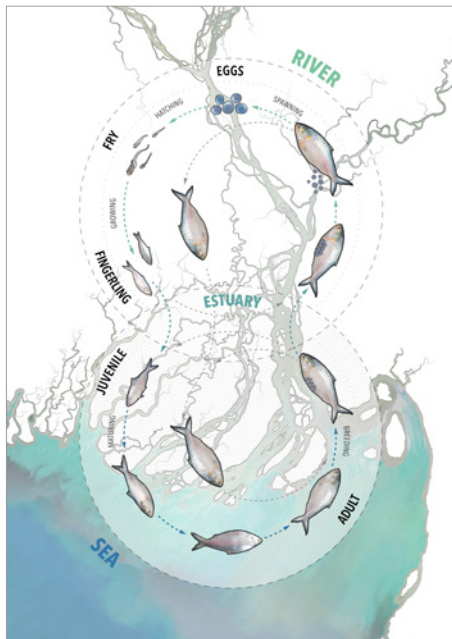
Topic	Globe Skimmer Dragonfly
Title	Globe Skimmer Dragonflies and Climate Change
Medium	Digital Image
Size	Image: 485x485mm @ 300dpi
Qty	1
Author	John Cook
Caption	Map of recent European sightings of the Globe Skimmer Dragonfly. Researchers believe the northwards expansion of their territorial range is linked to the effects of anthropogenic climate change.
Sources	Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model Dragonfly Territory 2006: A. Raschka, 'Distribution of Pantala Flavescens', Wikipedia, 2006 Dragonfly Territory 2017: J. Tann, 'Distribution of the dragonfly, Pantala Flavescens', Wikipedia, 2017. European Sightings: P. Buczynski et al., 'From Southern Balkans to Western Russia: Do First Polish Records of Pantala flavescens indicate a migration route?', Journal of the Entomological Research Society, vol. 21, no. 1, 2019, p. 12. Monsoonal Regions Calculations/Spatial Definition: World Climate Research Programme (WCRP), 'The Global Monsoon Systems', ND, p. 1 ITCZ Positions: Modern Position of the Intertropical Convergence Zone (ITCZ) in July and January: H. Cheng et al., 'The Global Paleomonsoon as seen through speleothem records from Asia and the Americas', Climate Dynamics, 39, 2012, pp. 1047



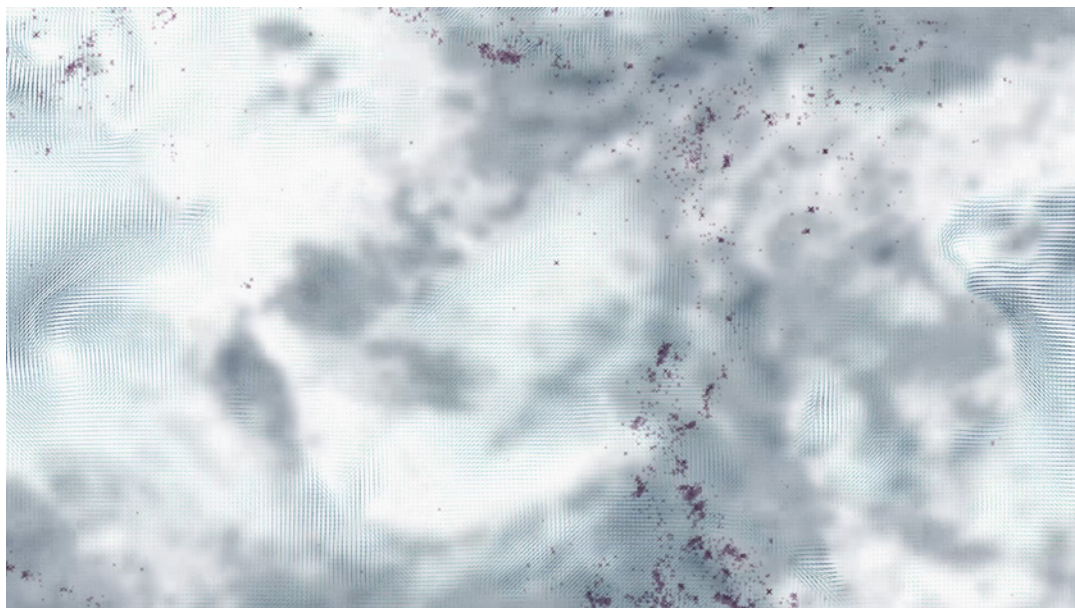
-
- Topic** Globe Skimmer Dragonfly
- Title** Intercontinental Multi-Generational Migration of the Globe Skimmer Dragonfly
- Medium** Digital Image
- Size** Image: 625x625mm @ 300dpi
- Qty** 1
- Author** John Cook
- Caption** Hypothesized multi-generational migratory journeys of the Globe Skimmer dragonfly between Africa and India using seasonal meteorological currents associated with the southwest monsoon and the Somali Jet Stream.
- Sources** Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations
Aerial Imagery: NASA Blue Marble Imagery + NASA WorldView
Topography + Bathymetry: ETOPO1 Global Relief Model
Regional Dragonfly Migrations: C. Anderson, 'Do dragonflies migrate across the western Indian Ocean?', *Journal of Tropical Ecology*, vol. 25, 2009, pp. 347-358
J.W. Chapman et al., 'Long-range seasonal migration in insects: mechanisms, evolutionary drivers and ecological consequences', *Ecology Letters*, no. 18, 2015, pp. 293.



Topic	Hilsa Fish
Title	Historic Hilsa Fish Migration in the Bengal Delta : 18th Century to the Present Day
Medium	Animation (GIFF) + Digital Images
Size	Animation: 4962x2792 pixels Image (Historic): 420x237mm @ 300dpi Image (Present): 420x237mm @ 300dpi
Qty	1
Author	John Cook
Caption	Changing Hilsa fish migration routes in the major rivers of the Bengal Delta from the eighteenth century to the present day.
Sources	Aerial Imagery: NASA Blue Marble Imagery Topography + Bathymetry: ETOPO1 Global Relief Model Oceanic Data: NOAA/NCEP CFSv2 Climate Forecast System



Topic Hilsa Fish
Title Hilsa Fish Migratory Cycles
Medium Animation (GIFF) + Digital Image
Size Animation: 1273x1800 pixels
 Image: 297 x 420 @ 300dpi
Qty 1
Author John Cook
Caption Animation showing the breeding stages and the present day migratory journey of the Hilsa Fish in the Bengal Delta.



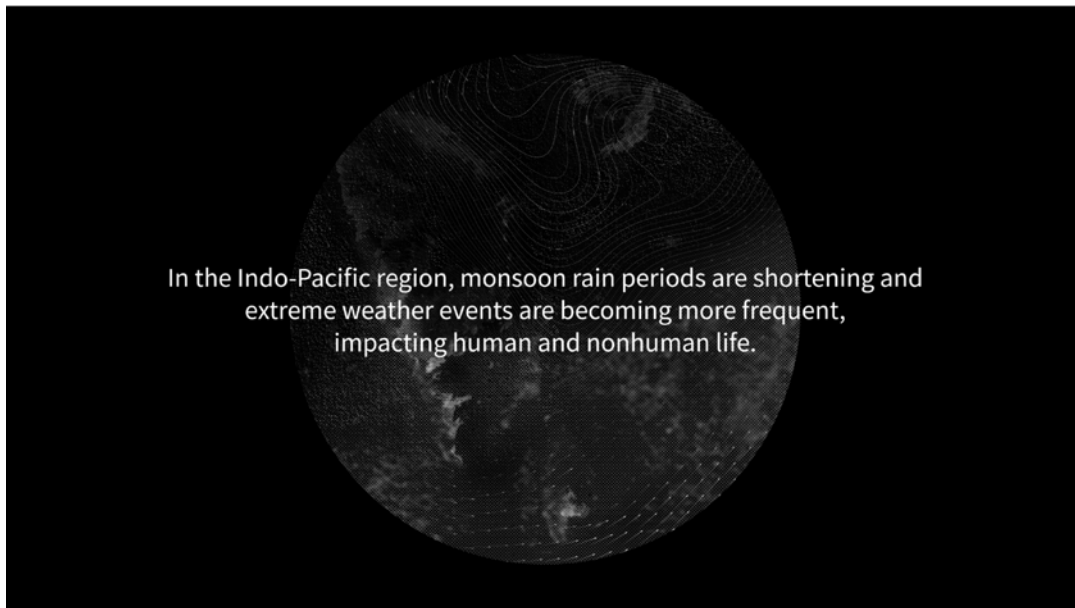
Screenshot 00:52

Topic	Website
Title	Monsoon Multiplicities Landing Page Animation
Medium	Animation
Size	1920 x 1080 pixels (1min 20secs)
Qty	1
Author	John Cook
Caption	<p>The landing page animation, though not revealed through topographic clues or political boundaries, is an aerial planar view centred over the Bay of Bengal extending to the Arabian Sea in the West and the South China Sea to the East. The animation is brought to life through data of particular chosen physical and climatic factors relating to the projects three subject South Asian cities, their specific material lenses, and three varying temporal time frames relative to their dynamics.</p> <p>Chennai, a city built of air, is represented through atmospheric wind data – swirling vectors communicating relative wind speed/directions play out at a 6 hour frequency over the course of a month (November 2015).</p> <p>Dhaka, a city woven from water, is represented through rainfall data - shadows of precipitable water move over the region over on a daily frequency the course of a year (2015).</p> <p>Finally Yangon, and its monsoonal-geologic life is represented through seismic data – twinkling crosses spatially pinpoint a decades worth of earthquakes and their relative magnitudes between 2006 – 2016.</p>
Sources	Climatic Data: NOAA/NCEP CFSv2 Climate Forecast System + NASA Earth Observations Seismic Events [1966-2016]: USGS Earthquake Catalogue



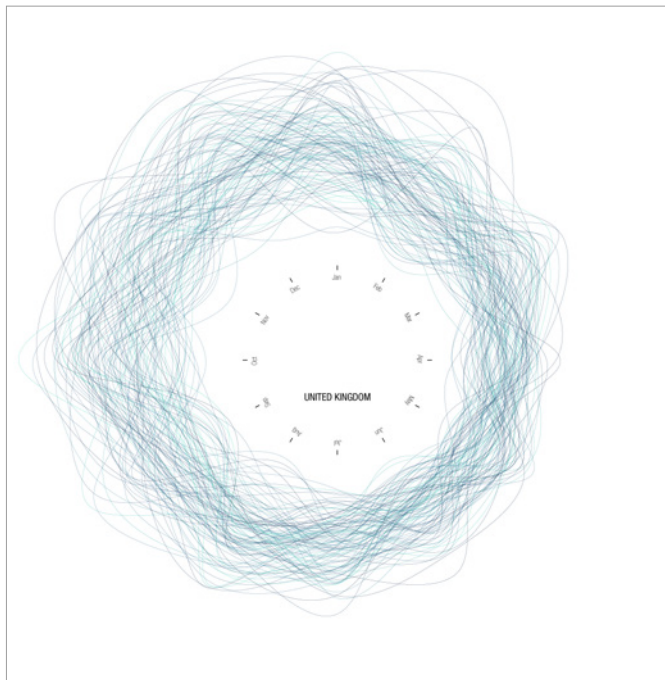
Screenshot 01:17

Topic	Website
Title	Monsoon Multiplicities Launch Video
Medium	Animation
Size	1920 x 1080 pixels (3min 40secs)
Qty	1
Author	John Cook
Caption	Introductory video for the launch of the Monsoon Multiplicities online exhibition.
Sources	NA



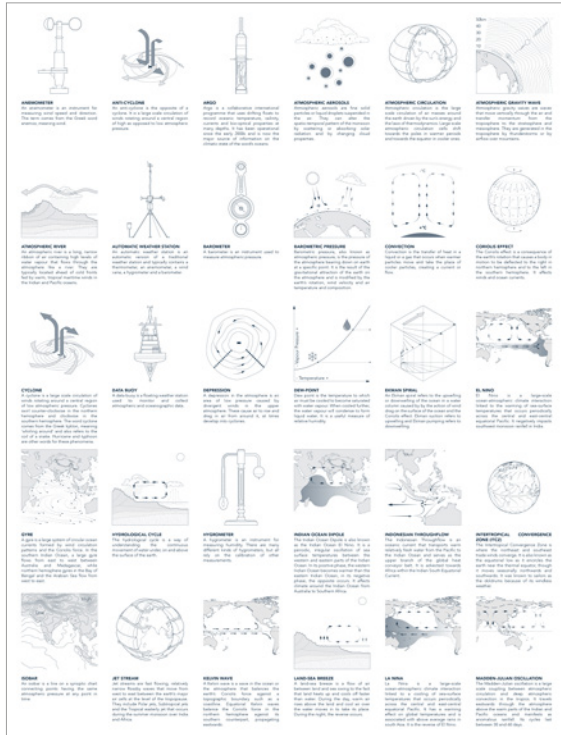
Screenshot 00:37

Topic	Venice Biennale
Title	Between the Dragonfly and the Barometer : Venice Biennale Sneak Peak Video
Medium	Animation
Size	1920 x 1080 pixels (1min 49secs)
Qty	1
Author	John Cook
Caption	A 'sneak peak' video for the MONASS installation at the Venice Biennale 2020
Sources	NA



UK

Topic	Other
Title	Monsoon Clocks : 1905 - 2015 (UK, India, Bangladesh, Myanmar)
Medium	Digital Image
Size	Images: 750x750mm @ 300dpi
Qty	4
Author	John Cook
Caption	These 'Monsoonal Clocks' describe the monthly rainfall totals from 1905-2015 for the UK, India, Bangladesh and Myanmar. Each coloured curve represents one year, its distance from the clock centre denotes the amount of rainfall for that month measured in millimetres. They aim to demonstrate the different cyclical rainfall patterns and amounts between locations, but also the extreme variability and outliers within this.
Sources	Mean Historical Rainfall Dataset: Produced by the Climatic Research Unit (CRU) of University of East Anglia (UEA)



Contact Sheet (1 of 2)

Topic	Other
Title	Monsoonal Glossary
Medium	Digital Images
Size	Vector Diagrams: 50x50mm Raster Diagrams: 50x50mm @ 300dpi
Qty	62
Author	John Cook
Caption	A collection of diagrams and short accompanying descriptions explaining frequently used terms through the project related to the Monsoon and associated meteorological phenomena and apparatus. [For individual captions see Word Doc]
Sources	[Various : See Word Doc]



Topic Other

Title MONASS Sketch Book

Medium Digital Images

Size Page Size: A5 @ 200dpi

Qty 85

Author John Cook

Caption Scanned sketchbook pages showing working notes and hand drawn sketches of preliminary drawing proposals and details between 2018-2020.

Sources NA