

Satellite Earth Observation and Urban Planning

Space for Twin Cities Urban Planning, Online Seminar, 26 November 2020

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A large-scale photograph of an astronaut launch at night. A massive rocket is being hoisted by two tall cranes, with a bright plume of fire and smoke at its base. A large, billowing cloud of white smoke is visible on the left side of the frame.

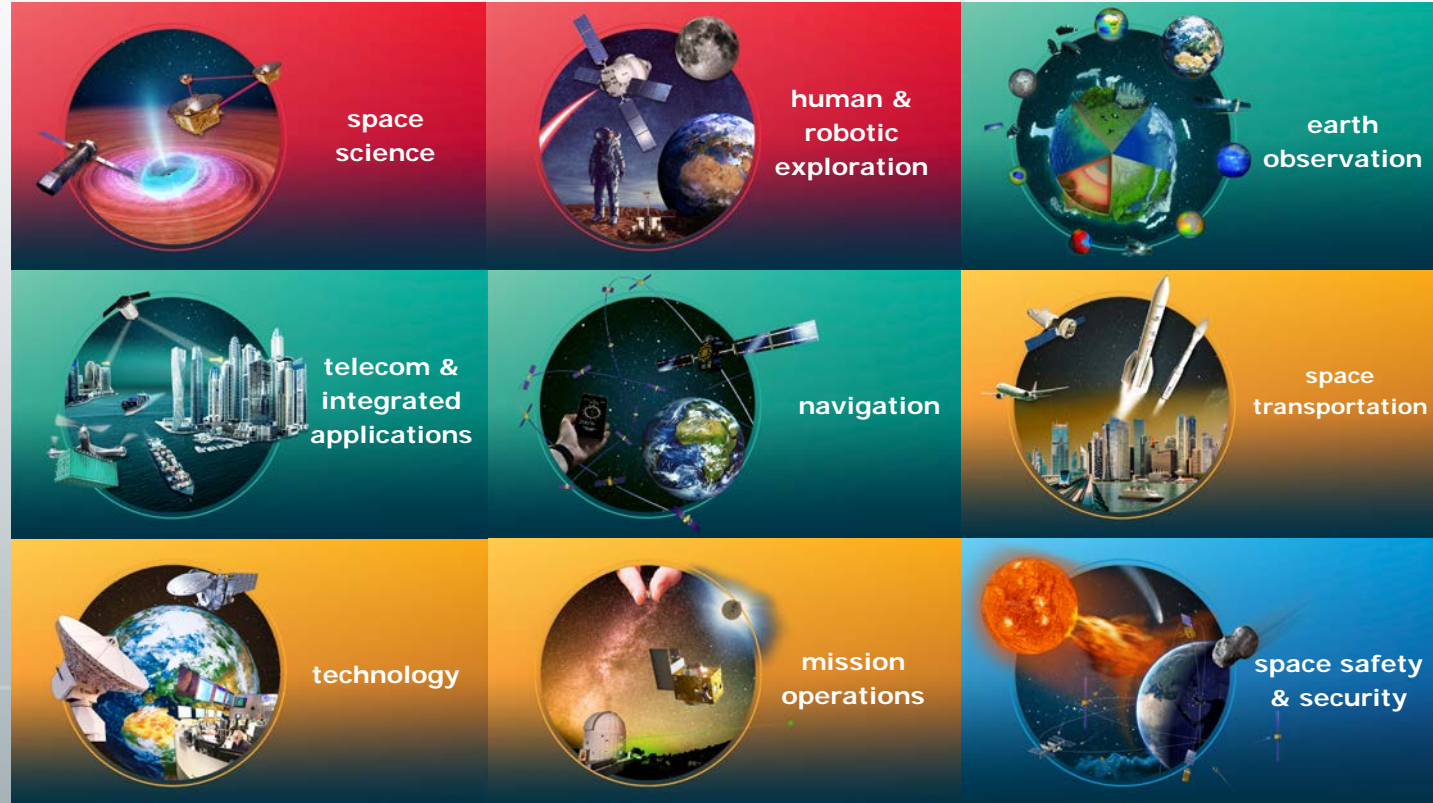
The European Space Agency

ESA Activities



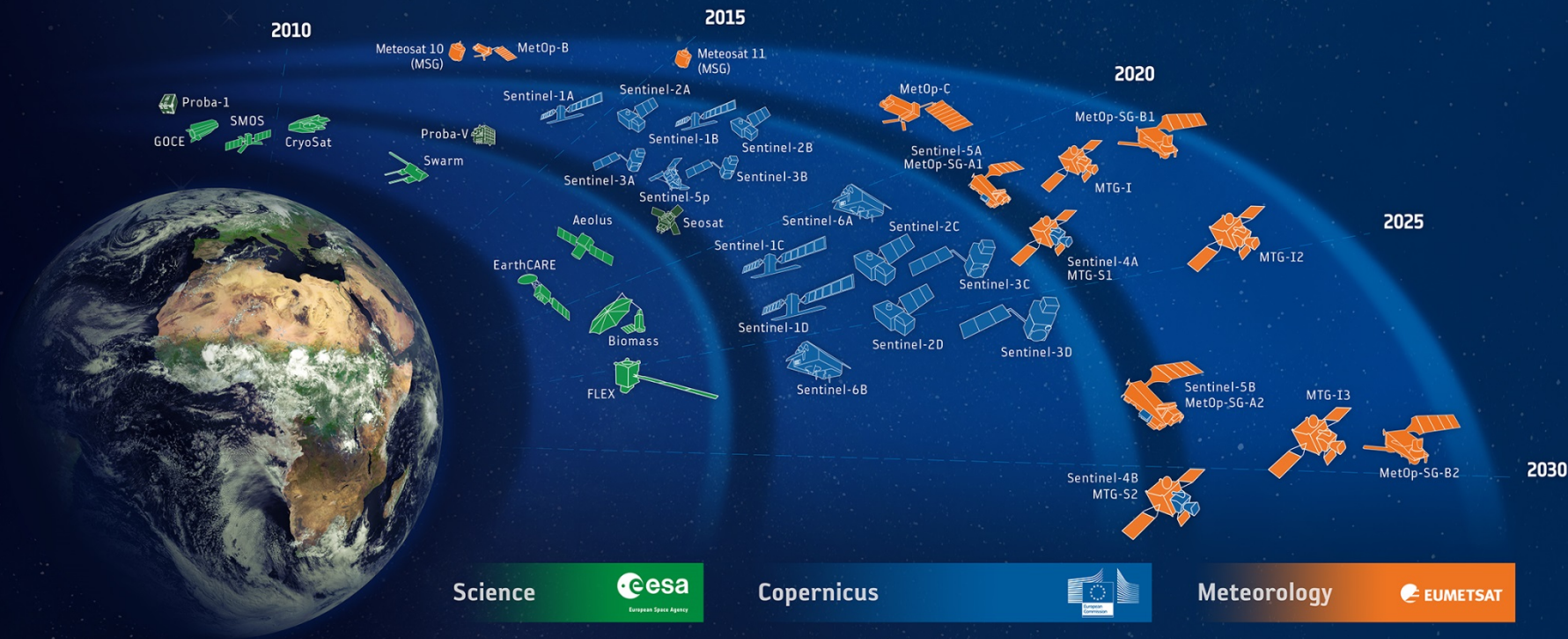
Exploration and use of space for exclusively peaceful purposes.

ESA is one of the few space agencies in the world to combine responsibility in nearly all areas of space activity.



Earth Observation at ESA

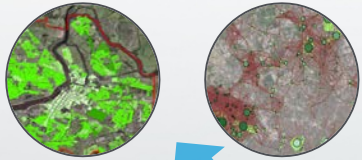
ESA-DEVELOPED EARTH OBSERVATION MISSIONS



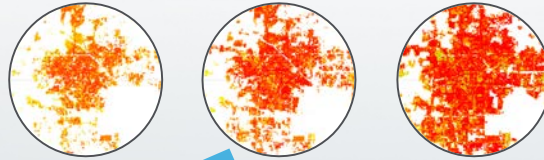
Urban Applications of Earth Observation

EO Products for Urban Development

Green Areas/Networks



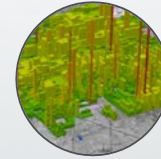
Extent, Imperviousness and Change



Building Footprint



Population Density

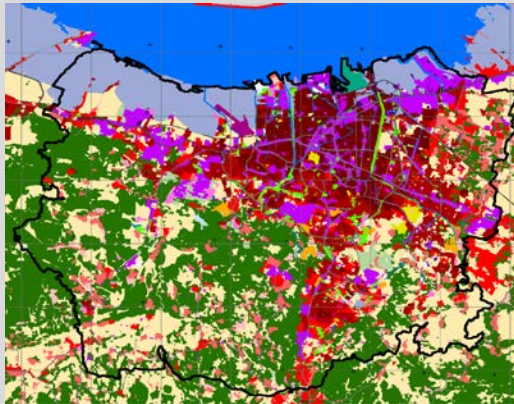


Waste Sites

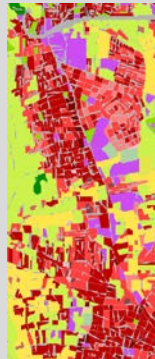


Baseline Products

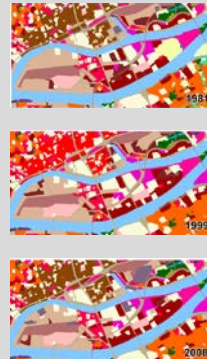
Urban and Peri-Urban Land Use / Land Cover



Detailed



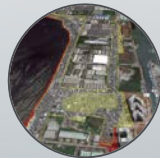
Change



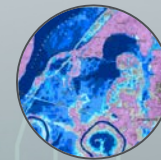
Transport Infrastructure



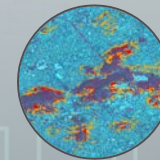
Informal Settlements



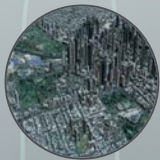
Flood Risk



Landslide Risk



Terrain Motion



Historical Urbanisation: Built-Up Extent



Shanghai, China

1985

1990

1995

2000

2005

2010

2015

1985 1990 1995 2000 2005 2010 2015

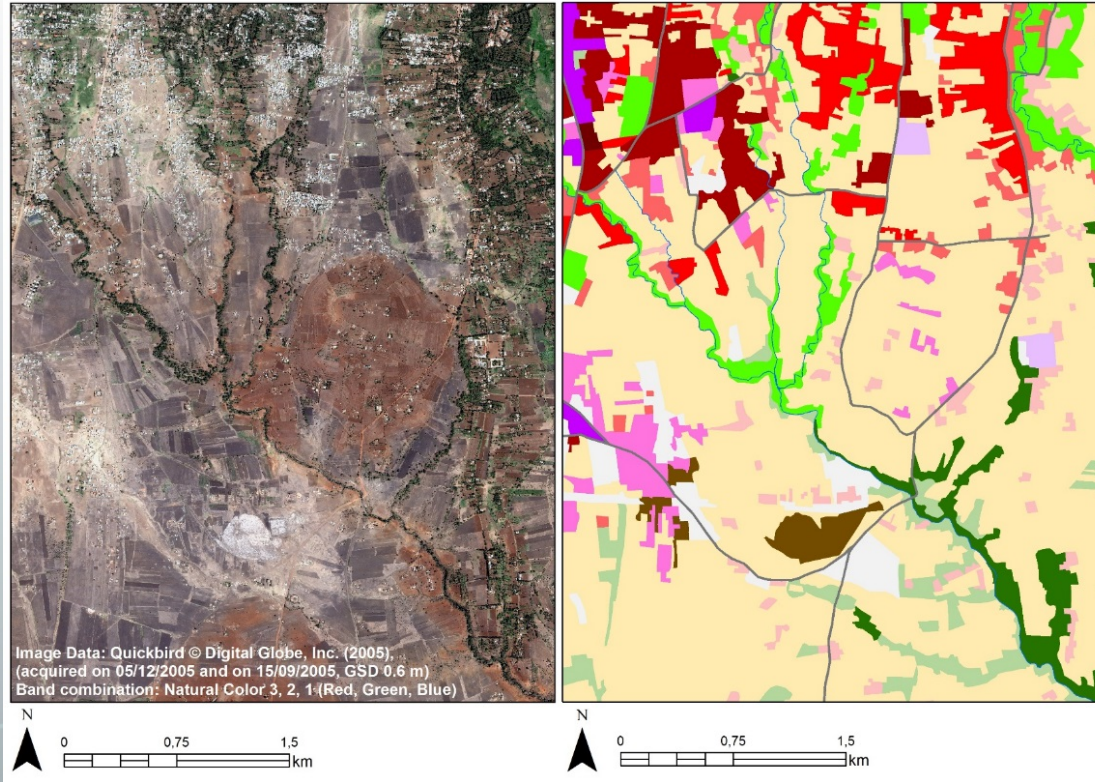


European Space Agency

Example: Assessment of Urban Master Plans

Arusha, Tanzania

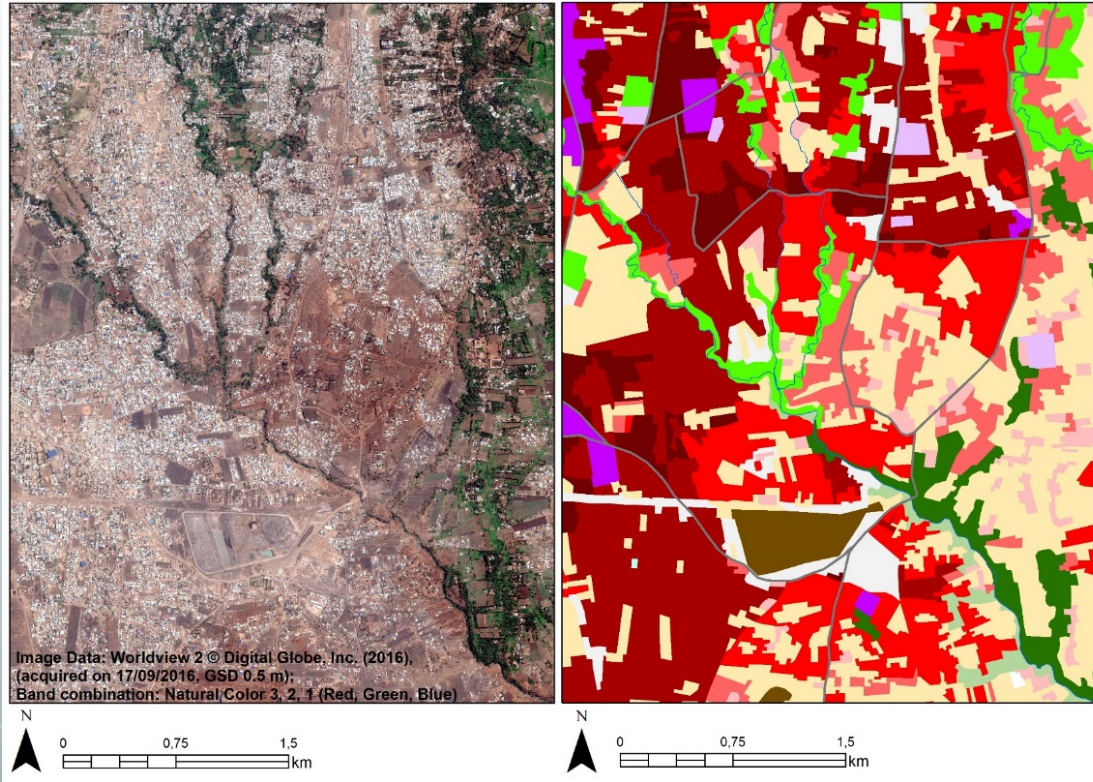
2005



Example: Assessment of Urban Master Plans

Arusha, Tanzania

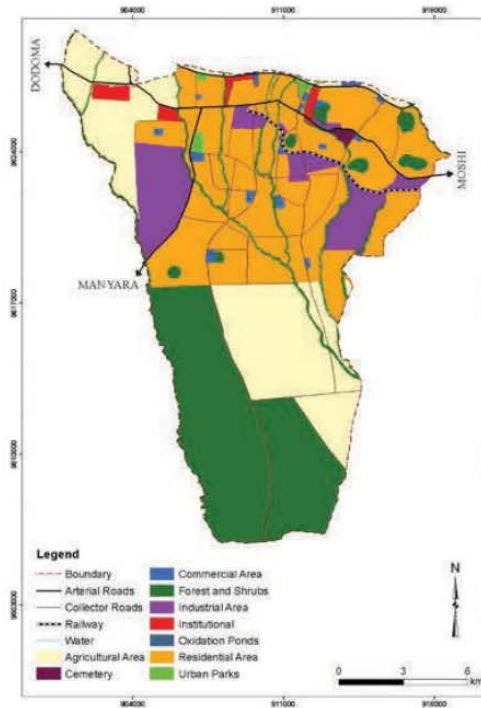
2015



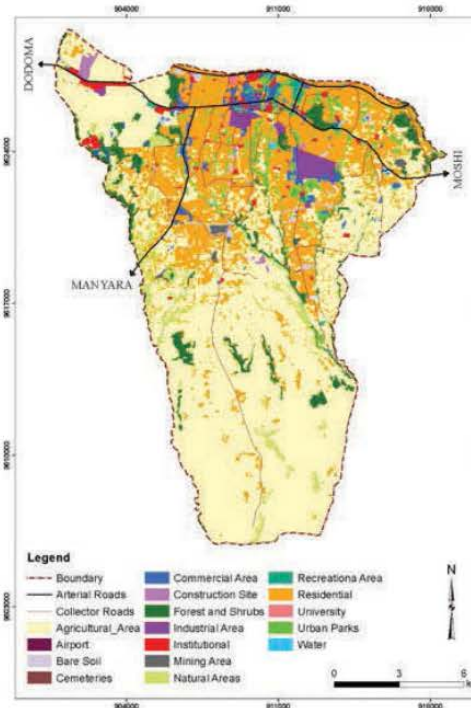
Example: Assessment of Urban Master Plans

Arusha, Tanzania

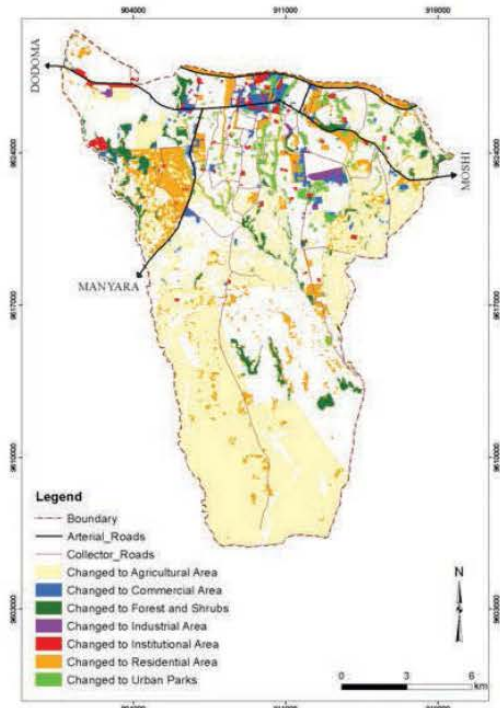
a. 1985 master plan



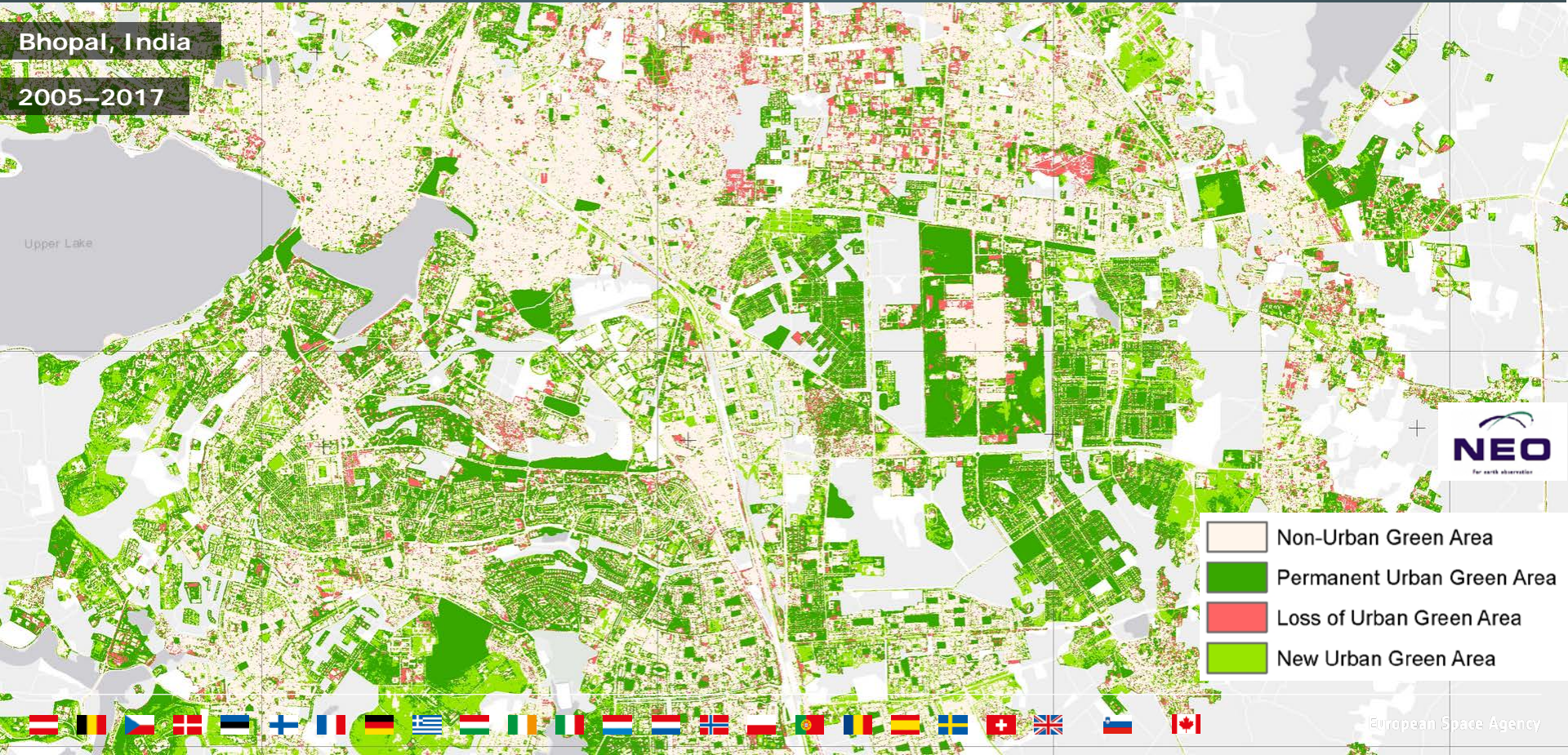
b. 2015 actual land use



c. Diversion from proposed land uses

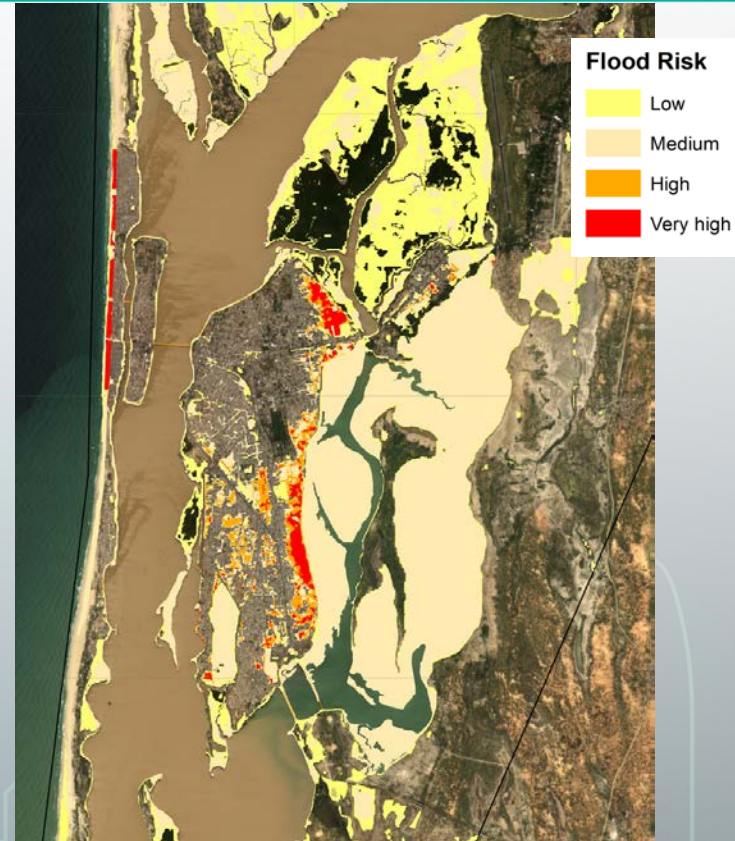
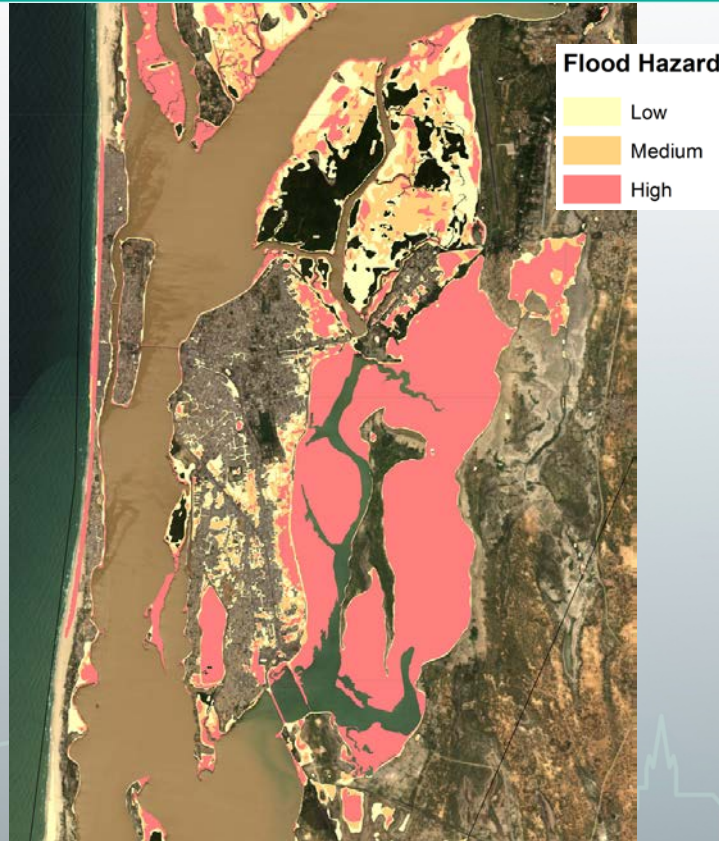


Example: Urban Green Areas



Example: Flood Hazard and Flood Risk

Saint-Louis, Senegal



Earth Observation: A Necessity






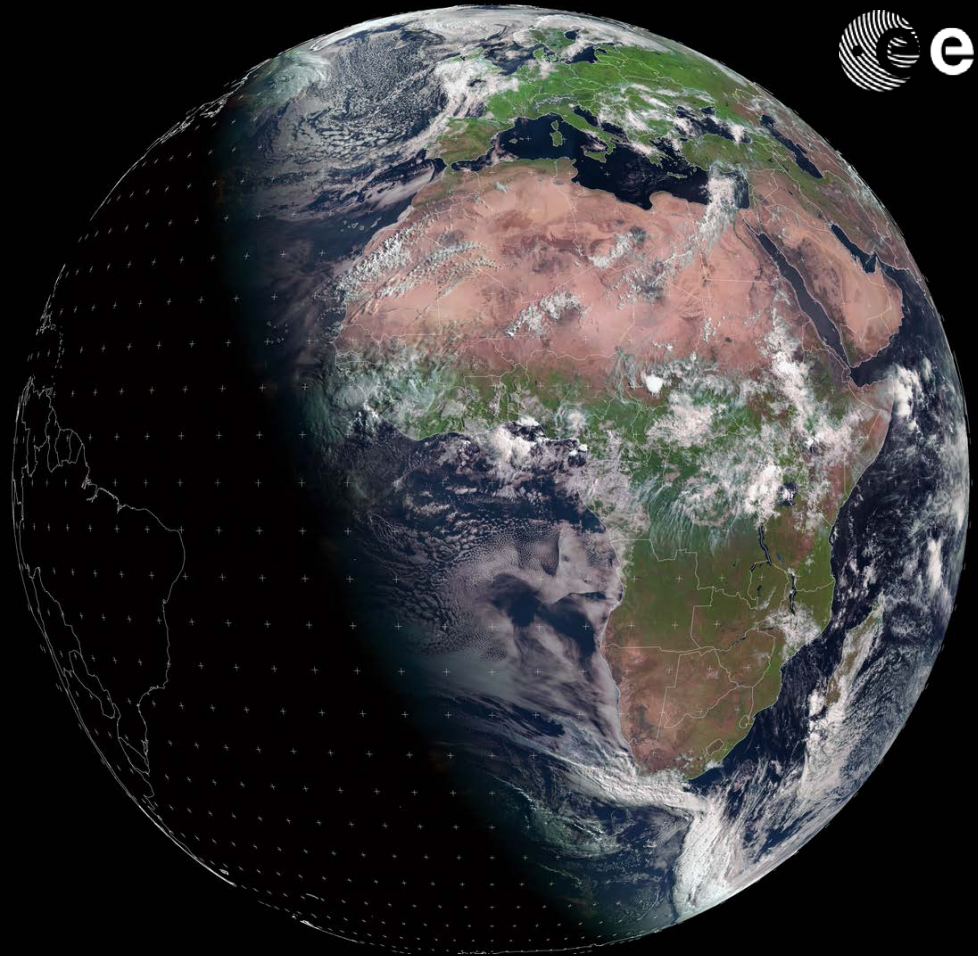
Thanks!

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