Earth Observation in the Context of the Convention on Wetlands (Ramsar, 1971)

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What are wetlands?

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- Definition: land areas that are flooded with water, either seasonally or permanently
  - Inland wetland types:
    - Marshes, ponds, lakes, fens, rivers, flood plains and swamps
  - Coastal wetland types:
    - Mangroves, saltwater marshes, seagrass beds, estuaries, lagoons and coral reefs
- Man-made wetlands including fish ponds, saltpans, rice paddies
- Ranging in size from less than one hectare to the massive Pantanal in Brazil, Bolivia, and Paraguay

What have wetlands done for you today?

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Water provision and purification

- At a very basic level, humans require 20-50 litres of water per day
- 2 billion people in Asia and 380 million EU residents depend on groundwater aquifers

Food supply

- Rice, grown in wetland paddies, is the staple for 3 billion people; 20% of global nutrition
- Average human consumes 19kg of fish each year; two –thirds of commercial fish breed and spawn in coastal wetlands; esp. mangroves and river estuaries

Biodiversity

- Home to more than 100,000 known freshwater species alone
- Essential for many amphibians and reptiles, for bird breeding and migration
- Wide range of important medicinal plants




What have wetlands done for you today?

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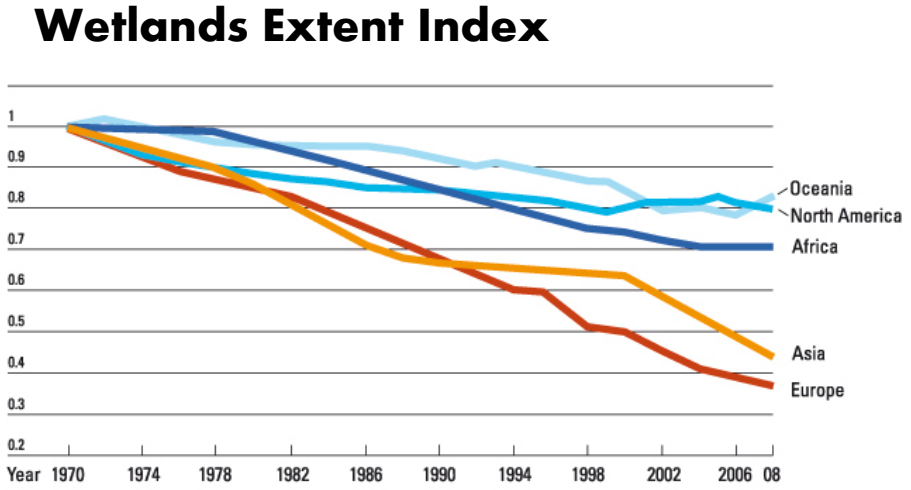
- **Climate Mitigation, Storage and Sequestration**
  - Peatlands (3% of land area) store twice the carbon in all the world's forests
  - Wetlands capture carbon 50 times more efficiently than rainforest
- **Climate resilience**
  - Coastal wetlands reduce impact of storms, hurricanes, tsunamis
  - Inland wetlands act as a sponge – relieving both floods and droughts





What's happening to wetlands?

- 64% of wetlands lost since 1900 and 87% lost since 1800
- Wetlands Extent Index is another indicator of this trend
  - 40% loss between 1970 and 2008 in more than 1000 surveyed sites
- 76% of populations of Wetland species lost in last forty years (2014 Living Planet Index-WWF)
- There are gaps in our overall knowledge






Why the Ramsar Convention?

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"Prevent, Stop and Reverse the Loss of Wetlands"

- 168 Contracting Parties, Five International Organisation Partners, Strong private sector engagement
- 2187 Ramsar Sites of International Importance
- Ramsar Sites Information Service (RSIS)
- Guidance on Wise Use
- Ramsar Advisory Missions
- Grants Assistance Programs
- Public awareness





What role for Earth Observation?

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- European Space Agency (ESA) is supporting an Africa-wide mapping of all wetlands – GLOBWETLANDS II
  - Wetland inventory, habitat maps, water cycle regimes, water quality parameters, river basin hydrology, mangroves mapping

- Japanese Space Exploration Agency (JAXA) is supporting Global Mangrove Watch
  - Classifying mangrove communities focused on extent, structure, biomass and/or dominant/species or genus.
  - Data generated for insular and mainland Southeast Asia, northern Australia, Belize and the Amazon. Global maps of all mangroves across time sequences by 2016

What possible pathways to creating impact?

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Ends:

- Sustainable Development Goals
- Creating multiple dividends for people
- Supporting better management decisions

Means:

- Private Sector Supply Chains
- Financing Decisions
- Protected Area Safeguards





What possible pathways to creating impact?

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Supporting Goal 1: Addressing the Drivers of Wetland Loss And Degradation

- Target 1: Wetland benefits and ecosystem services feature in national/ local policy strategies and plans relating to key sectors such as water, energy, mining, agriculture, tourism, urban development, infrastructure at the national and local level
- Target 2: Water use sustainability is improved while respecting ecosystem and basin requirements
- Target 3: Public and private sectors have taken steps to apply guidelines and good practices for wise use of water and wetlands
- Target 4: Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and management responses are prepared and implemented to prevent their introduction and establishment.

What possible pathways to creating impact?

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Supporting Goal 2: Effectively Conserving and Managing the Ramsar Site Network

- Target 5: The ecological character of Ramsar sites is maintained, through effective planning and management.
- Target 6: There is a significant increase in the Ramsar site network in particular underrepresented types of wetlands and transboundary sites
- Target 7: Sites that are at risk of loss of ecological character have threats addressed.

What possible pathways to creating impact?

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Supporting Goal 3: Wisely Using All Wetlands

- Target 8: National wetland inventories have been completed, disseminated and used for promoting the conservation and effective management of all wetlands.
- Target 9: The wise use of wetlands is strengthened through integrated resource management at the scale of the basin.
- Target 10: Wetland services and benefits are widely demonstrated and documented.
- Target 11: Restoration is in progress or completed in degraded wetlands, with priority to wetlands that are relevant for biodiversity conservation, disaster risk reduction, livelihoods and/or climate change mitigation and adaptation.
- Target 12: Sustainable fishery, agriculture and ecotourism are expanded, contributing to biodiversity conservation and human livelihoods.

What possible pathways to creating impact?

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Supporting Goal 4: Enhancing Implementation

- Target 13: Scientific and technical guidance at global and regional levels is developed on relevant topics and is available to policy makers and practitioners in an appropriate format and language
- Target 14: Ramsar regional initiatives with the active involvement and support of the Parties in each region are reinforced and developed into effective tools to assist in the full implementation of the Convention.
- Target 15: Wetland values are mainstreamed through communications, education, public participation and awareness.
- Target 16: Financial and other resources for effectively implementing the fourth Ramsar Strategic Plan 2016 – 2021 from all sources are substantially increased
- Target 17: International cooperation is strengthened at all levels

Partnership example: Ramsar Convention and UNEP

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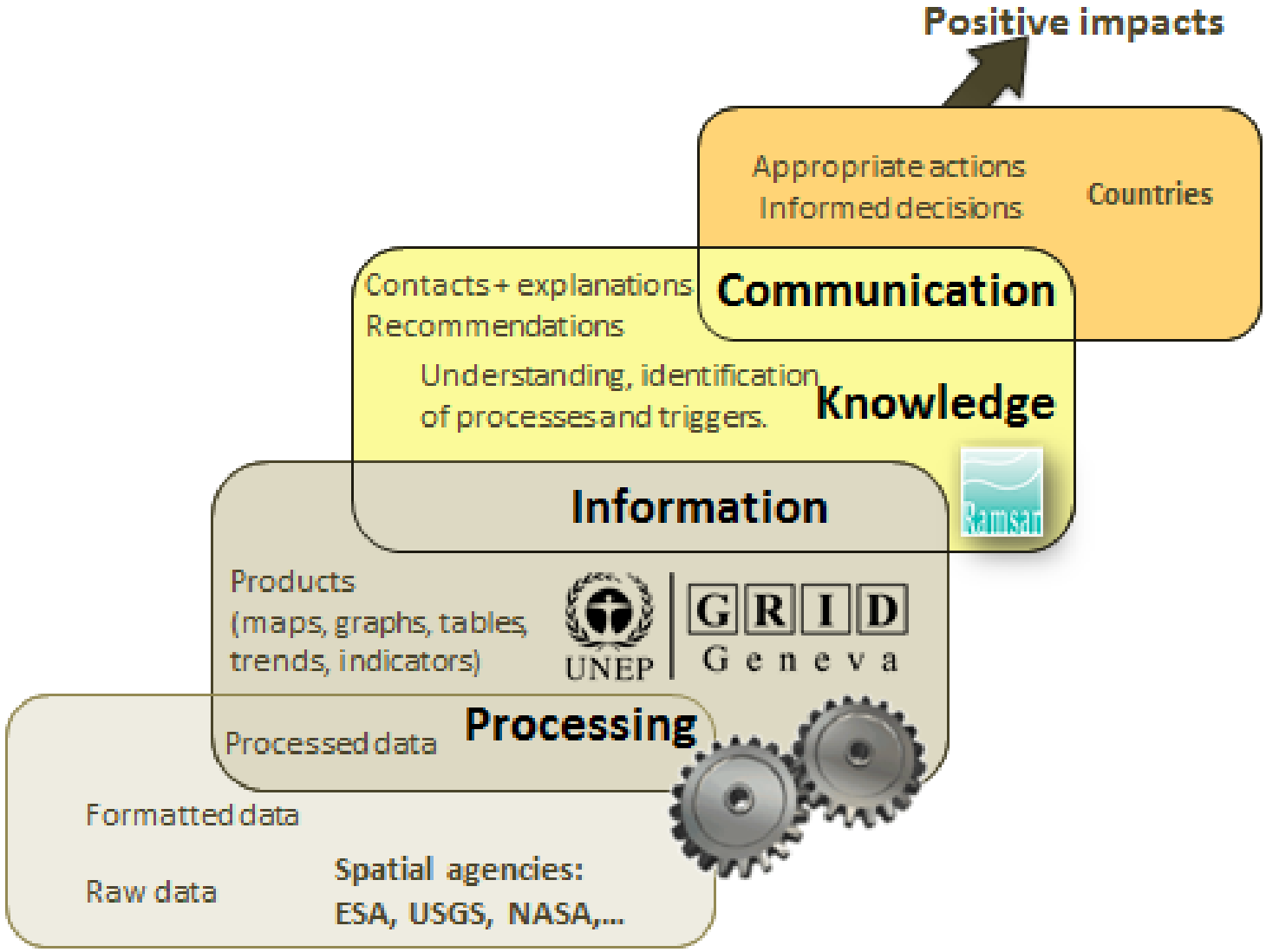

Product capabilities

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Monitoring wetlands

- South of Iraq at the confluence of Tigris and Euphrates
- 3 units;
  - Al-Hammar
  - Al-Qurnah (Central)
  - Al-Hawizeh
- Permanent wetlands since 1973/76 to 2002

  9000 km^2 – 760 km^2

Product capabilities

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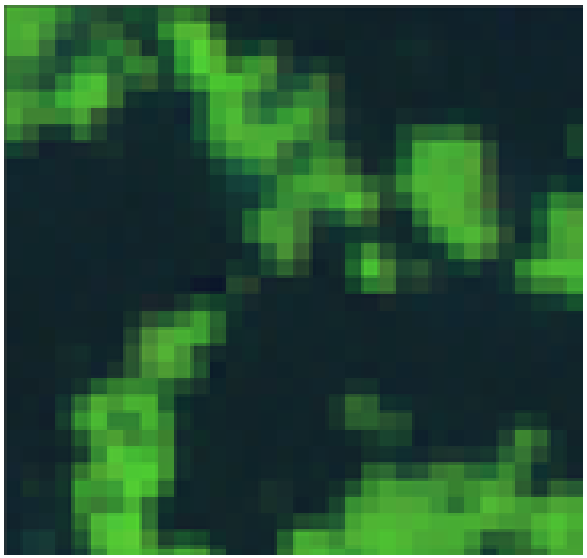
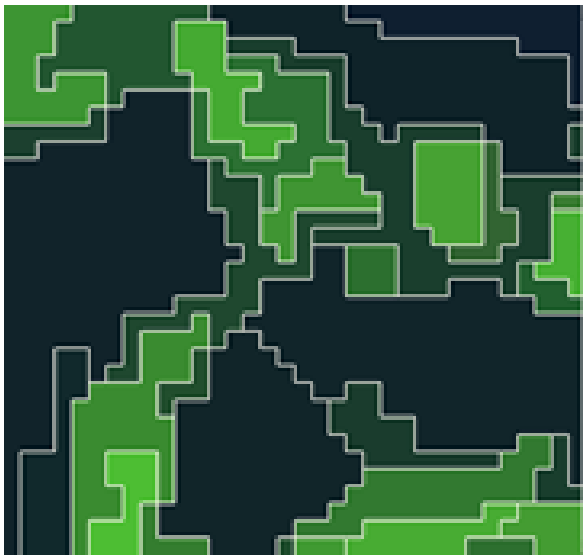
Segmentation: from pixel to Object



PIXEL



OBJET

- Object-oriented analysis
- Avoid "poivre sel" effect, introduce form and texture notions, contextual analysis, multi-scale ....
- Automation of operations

Product capabilities

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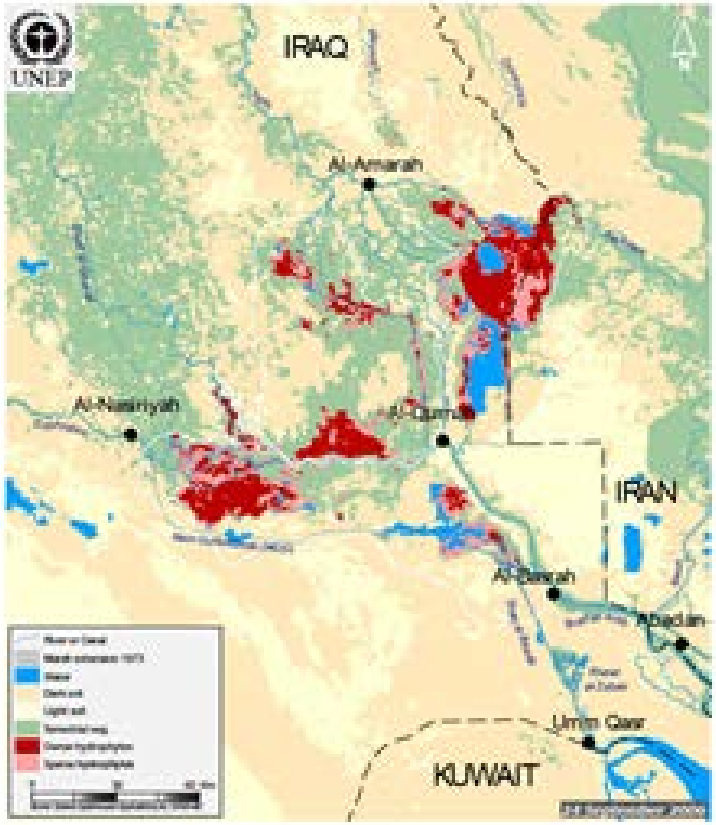
Automatic classification



Product capabilities

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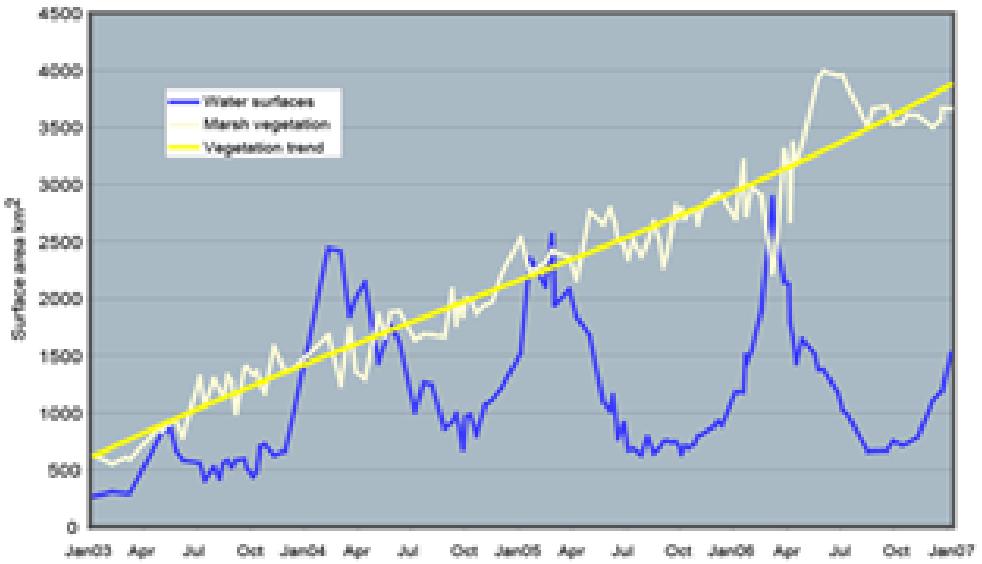
Trend analysis



- Clear growth of marsh vegetation (yellow)
- Artificial and seasonal floods (blue)
- important recovery of the marshes, currently reaching almost 58% of initial surface (1973-76)

Product capabilities

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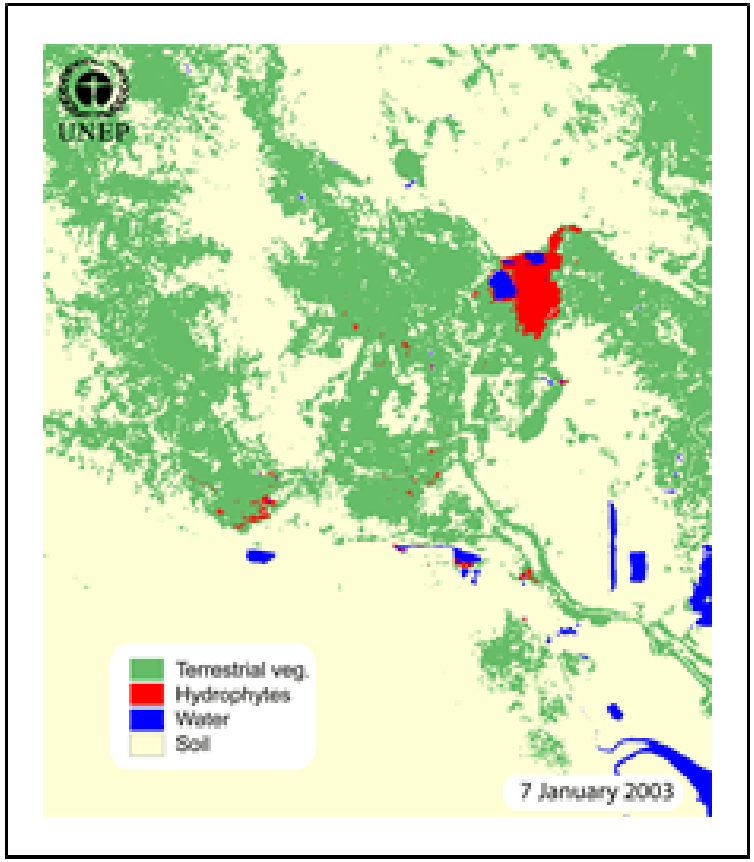
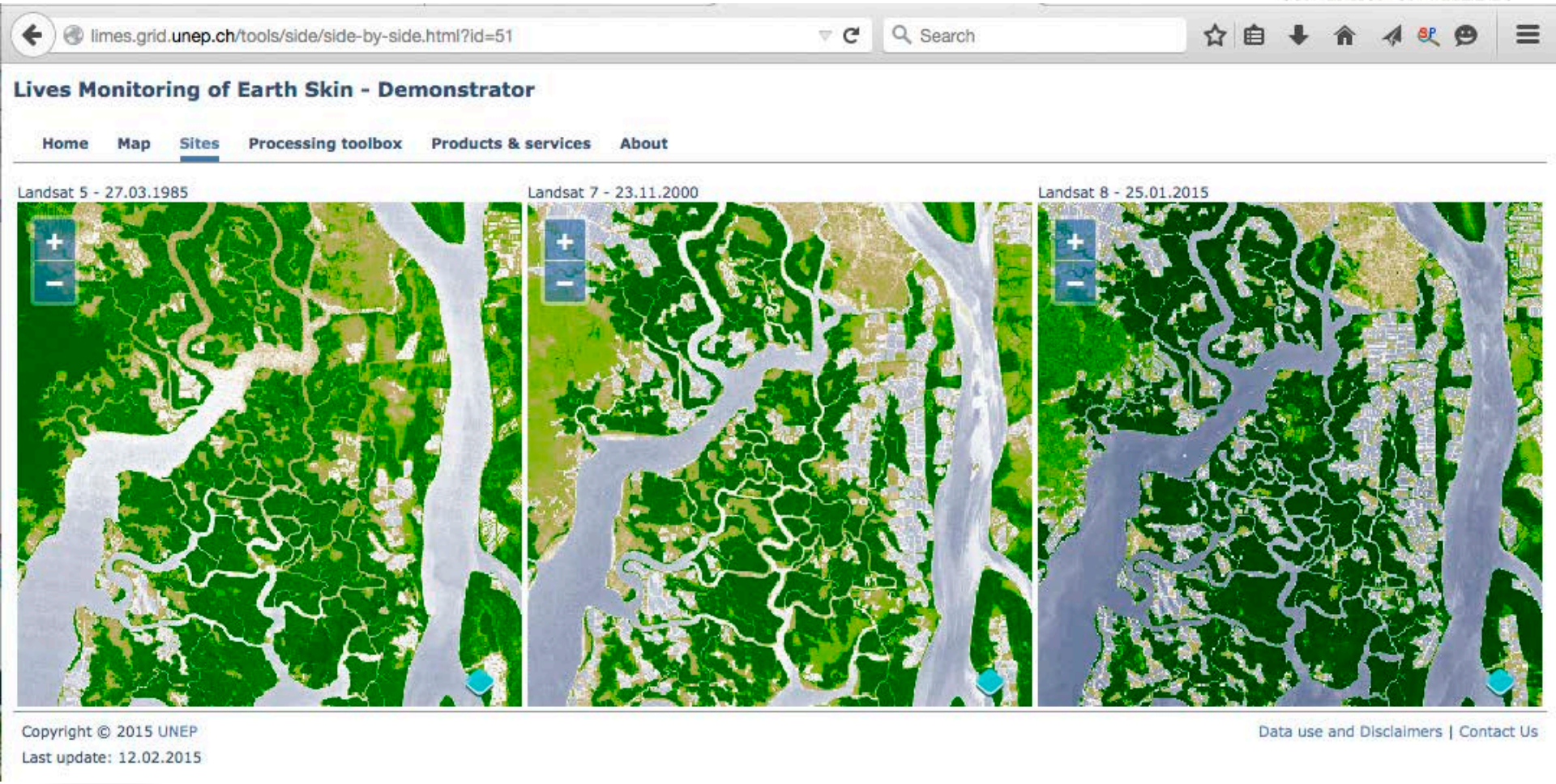
Monitoring progress (movie)



- First flood May 2003
- 2nd flood, March 2004
- Vegetation growth in flooded area in particular Al-Hammar and Al-Qurnah

Product usefulness



Product usefulness

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Ramsar Sites Information Service

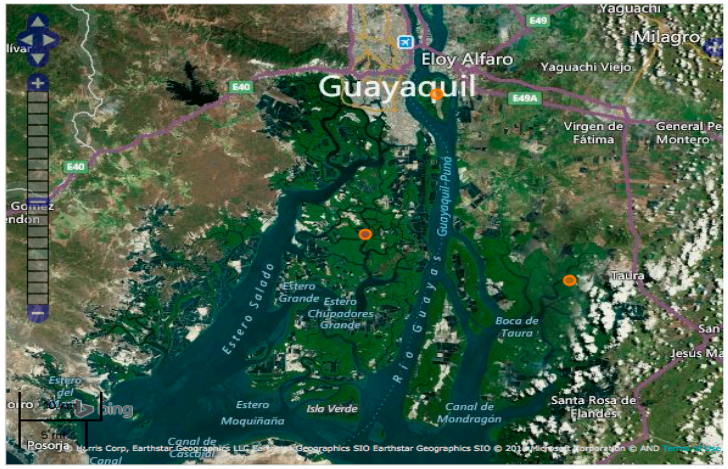
2,186 Sites covering 208,514,909 ha

Log in | EN FR ES

ABOUT | EXPLORE SITES | MANAGE MY SITES

Manglares del Estuario Interior del Golfo de Guayaquil

Country:	Ecuador
Site number:	2,098
Area:	15,337 ha
Designation date:	15-12-2012
Coordinates:	2°24'17"S 79°55'50"W



Materials presented on this website, particularly maps and territorial information, are as-is and as-available based on available data and do not imply the expression of any opinion whatsoever on the part of the Secretariat of the Ramsar Convention concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Overview | Downloads

02/02/2013; Guayas; 15,337 ha; 02°24'17"S 079°55'50"W. Mainly constituted by mangrove forests, the site is important for the control and prevention of flooding and climate regulation. According to the National Red List, it supports several endangered species, like the Rufous-necked Wood Rail Aramides axillaris and the Red-lored Amazon Amazona autumnali. There are recent records of Crocodylus acutus presence, which according to the National Red List of Reptiles is Critically Endangered. A great number of endemic species can be found, like the Ecuadorian Ground Dove (Columbina buckleyi), the Pacific Parrotlet (Forpus coelestis), the Red-masked Parakeet (Aratinga erythrogenys), and the Pacific Pygmy Owl (Glaucidium peruanum). Waterbird species like the killdeer (Charadrius vociferus), the Franklin's Gull (Larus pipixcan), and the Laughing Gull (Larus atricilla) are present, and the site has been identified by BirdLife International as an Important Bird Area (IBA). Ramsar Site no. 2098. Most recent RIS information: 2012.

Administrative region: Guayas

Last publication date:	01-01-2012

Generating Demand

Product capabilities + Usefulness = Increased Demand

- Focus on end-user needs
  - Developing Indicators useful in context of Sustainable Development Goals
  - Monitoring negative impacts within Private Sector Supply Chains, and explaining the risks
  - Providing useful baseline information to inform financing decisions, such as wetlands restoration
  - Creating alerts of changes in the condition of protected areas, including Ramsar Sites
  - Supporting better site/area management decisions, also requiring building capacity
  - Engage and inspire the 'public at large', including via citizen science
  - Specifying exact locations where interventions can create greatest dividends for people, such as wetlands restoration to increase climate, food and water security

- Collaboration creates shared value
  - Developing common standards
  - Open sharing of data
  - Collective problem solving

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Thank you!