

# Introduction

- Measuring Progress is a derivative of GEO-6
- Provides an overview of the current state of the environmental dimensions of sustainable development based on the SDG indicators
- Overview of availability of statistical and spatial data, analytical methods and visualisations
- Knowledge and information gaps in assessing progress
- SDGs provide a framework to achieve a better and more sustainable future
- 17 SDGs, 169 targets, 244 indicators
- Three dimensions of sustainable development: economic, social, environmental
- People, Planet, Prosperity, Peace and Partnership

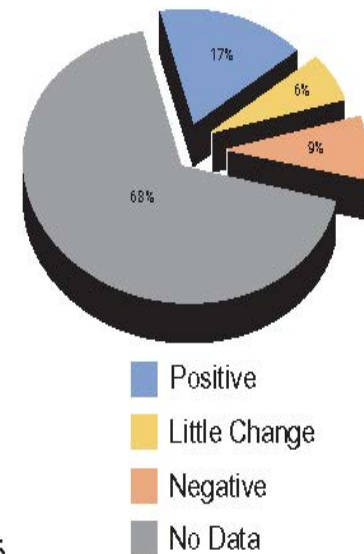
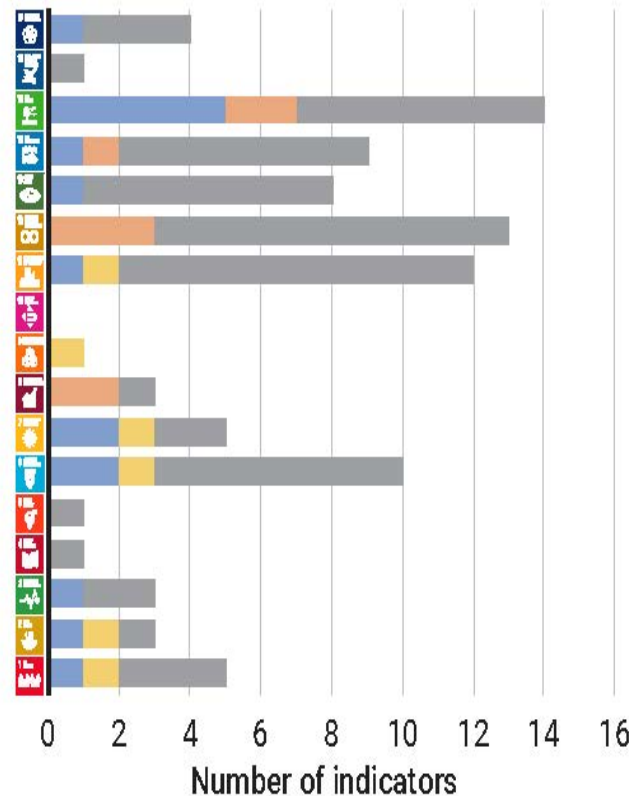
# Overview of SDGs Progress

23% of the environment-related  
SDG indicators will be met if  
current trends continue.

For the remaining 77%: 68% have  
insufficient data to assess  
progress and for 9% it is unlikely  
that the target will be met  
without upscaling action.

Need to scale up support for  
environmental monitoring and  
analysis.

Promote using data for action in  
order for the environmental  
dimension of the SDGs to be  
met.



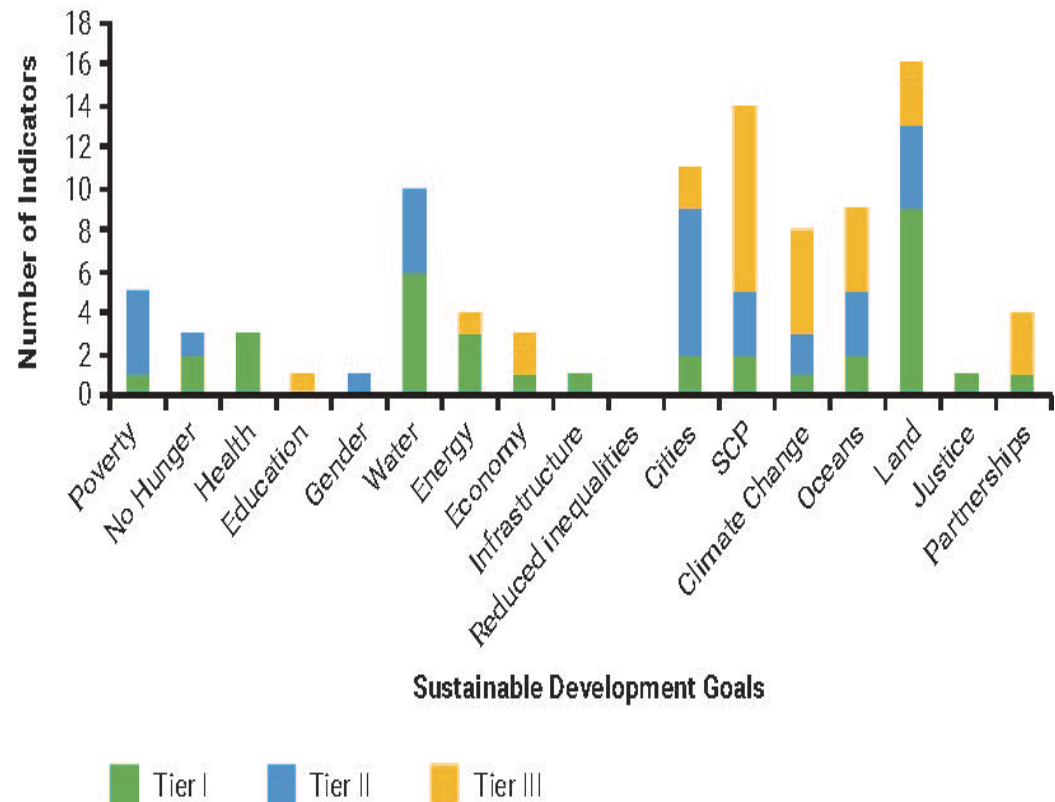
# Analysis

- Progress has been made on all 11 environment-related SDGs indicators related to policy, financial and institutional processes with available data
- Mixed progress in improving access to environmental resources and reducing the impacts of environmental degradation on human health and food security
- Either no data or no progress towards all 12 of the SDGs targets related to the state of the environment
- Efficient use of natural resources towards achieving sustainable consumption and production remains a global challenge due to economic growth

# Analysis (cont.)

- Information on the gender-environment nexus remains largely limited
- People and the economy are two key determinants for indicators that can be expressed in terms of per capita, proportion of population and per unit of GDP
- Data and statistics for measuring the environmental dimension of development remains a substantial constraint
- Insufficient information available for geospatial analysis thus impossible to understand the challenges facing ecosystems or the relationship between the environment and people.

More than 30% of the environment-related SDGs indicators still do not have an agreed methodology



# Recommendations

- Scale up actions to reduce pollution, improve resource efficiency and better protect the environment
- Scale up support for environmental monitoring and analysis
- Urgent need to prioritise the development of SDGs indicator methodologies and disaggregated and geospatial information
- Invest in national statistical systems and build national capacity for monitoring the environment
- Promote integrated analysis of the environment and of policy interactions, including reducing data fragmentation and supporting data sharing in accordance with national e-government and open data frameworks

# Recommendations (cont.)

- Regional, sub-regional and country-level mechanisms should be used to improve SDG follow-up, review and implementation
- Goal 12 (Sustainable Consumption and Production) is key to attainment of the other Goals but has the least data availability, least funding and appears to be awarded low priority from Member States in their Voluntary National reviews and SDG prioritization processes
- Fresh water, in sufficient quantity and quality, is essential for all aspects of life and sustainable development



# Europe

Represents a change in condition based on this indicator in a positive direction between 2000-2017 (does not represent that the SDG target will be achieved).  
Represents very little negative or positive change in this indicator between 2000-2017.  
Represents a change in condition based on this indicator in a negative direction between 2000-2017.  
Some data is available, but not enough to analyse changes over time.  
No data is available.

## SDG 1: END POVERTY

Land Tenure (1.4.2)
Disasters: persons affected (1.5.1)
Disasters: economic loss (1.5.2)
Disaster risk reduction strategies (1.5.3)
Disaster risk reduction strategies for local government (1.5.4)

## SDG 2: FOOD SECURITY

Sustainable agricultural practices (2.4.1)
Secure genetic resources for food (2.5.1)
Local breeds for agriculture (2.5.2)

## SDG 3: HEALTH

Air pollution mortality (3.9.1)
Water-related mortality (3.9.2)
Unintentional poisoning (3.9.3)

## SDG 4: EDUCATION

Education for sustainable development (4.7.1)
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## SDG 5: GENDER

Women agricultural land owners (5.a.1)
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## SDG 6: WATER

Safe drinking water (6.1.1)
Wastewater treatment (6.3.1)
Water quality (6.3.2)
Water efficiency (6.4.1)
Water stress (6.4.2)
Water resource management (6.5.1)
Water cooperation (6.5.2)
Water related ecosystems (6.6.1)
Investment in water and sanitation (6.a.1)
Local water management (6.b.1)

## SDG 7: ENERGY

Reliance on clean fuels (7.1.2)
Renewable energy (7.2.1)
Energy intensity (7.3.1)
Clean energy research and technology (7.a.1)
Investment in energy efficiency (7.b.1)

## SDG 8: DECENT WORK AND ECONOMIC GROWTH

Material footprint (8.4.1)
Domestic material consumption (8.4.2)
Employment in sustainable tourism (8.9.2)

## SDG 9: INDUSTRY, INNOVATION AND INFRASTRUCTURE

CO2 emissions (9.4.1)
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## SDG 10: REDUCED INEQUALITIES

The environmental dimension is not represented in Goal 10
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## SDG 11: CITIES AND COMMUNITIES

Access to public transport (11.2.1)
Land consumption (11.3.1)
Urban planning (11.3.1)
Investment in cultural and natural heritage (11.4.1)
Disasters: persons affected (11.5.1)
Disasters: economic loss (11.5.2)
Urban solid waste management (11.6.1)
Ambient air pollution (11.6.2)
Public land in cities (11.7.1)
Disaster risk reduction for local government (11.b.1)
Disaster risk reduction strategies (11.b.2)
Financial assistance to LDCs (11.c.1)

## SDG 12: RESPONSIBLE LIFESTYLES

Action plans for sustainability (12.1.1)
Material footprint (12.2.1)
Domestic material consumption (12.2.2)
Food loss (12.3.1a) and Food waste (12.3.1b)
Information Transmitted under Chemicals and Waste Conventions (12.4.1)
Hazardous waste generation (12.4.2)
Recycling (12.5.1)
Corporate sustainability reporting (12.6.1)
Sustainable public procurement (12.7.1)
Education for sustainable lifestyles (12.8.1)
Research for sustainable lifestyles (12.a.1)
Sustainable tourism strategies (12.b.1)
Fossil fuel subsidies (12.c.1)

## SDG 13: CLIMATE ACTION

Disasters: persons affected (13.1.1)
Disaster risk reduction strategies (13.1.2)
Disaster risk reduction for local government (13.1.3)

Climate change action plans (13.2.1)
Climate change education (13.3.1)
Community based approaches to climate change (13.3.2)
Resources mobilized for climate action (13.a.1)
Climate action support for LDCs (13.b.1)

## SDG 14: OCEANS

Marine pollution and coastal eutrophication (14.1.1)
Management of marine areas (14.2.1)
Ocean acidification (14.3.1)
Sustainable fish stocks (14.4.1)
Marine protected areas (14.5.1)
Fishing regulation (14.6.1)
Fisheries subsidies economic benefits to SIDS and LDCs (14.7.1)
Scientific knowledge, research capacity and transfer of marine technology (14.a.1)
Instruments for conservation and sustainable use of oceans and their resources (14.c.1)

## SDG 15: LAND AND BIODIVERSITY

Forest area (15.1.1)
Protection of key biodiversity areas (15.1.2)
Forest area annual net change rate (15.2.1)
Land degradation (15.3.1)
Mountain protected areas (15.4.1)
Mountain green cover (15.4.2)
Endangered species (15.5.1)
Strategies for sharing biodiversity benefits (15.6.1)
Trade in poached or illicitly trafficked wildlife (15.7.1)
Strategies for preventing invasive alien species (15.8.1)
Progress towards Aichi Biodiversity Target 2 (15.9.1)
Investment in biodiversity and ecosystems (15.a.1)
Investment in sustainable forests (15.b.1)
Protection against poaching, trafficking and trade (15.c.1)

## SDG 16: PEACE AND JUSTICE

Participation in global governance (16.8.1)
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## SDG 17: PARTNERSHIPS AND MEANS OF IMPLEMENTATION

Science and technology cooperation (16.8.1)
Funding for environmentally sound technologies (17.7.1)
Funding for capacity building (17.9.1)
Mechanisms enhancing policy coherence (17.14.1)

An aerial photograph of a vast lake system, likely the IJsselmeer in the Netherlands, featuring numerous small, tree-covered islands and peninsulas. The surrounding landscape consists of green agricultural fields and some distant urban areas under a clear blue sky.

**Target 6.6 By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes**

**Indicator 6.6.1 Change in extent of water-related ecosystems over time**



## SDG Indicator 6.6.1

*Change in the extent of water-related ecosystems over time*



### **Sub-indicators:**

- Spatial Extent
- Quantity
- Quality

### **Water-related Ecosystems:**

- Open Water Bodies
    - lakes & rivers, artificial (reservoirs)
  - Vegetated Wetlands
    - coastal – mangroves
    - inland – peatlands, swamps, marshes, paddies,
  - Groundwater
-

## Piloting phase for Indicator 6.6.1 (2015-17)

- Methodology developed with pilot countries
- 40 national data sets during 2017
- Significant reporting challenges due to:
  - lack of data
  - burden of reporting
  - complex indicator



## **Global (satellite based) data**

**Level 1 includes 2 Sub-Indicators based on globally available data from earth observations which will be validated by countries against their own methodologies and datasets:**

- **Sub-Indicator 1 – spatial extent of water-related ecosystems (Km<sup>2</sup>)**
- **Sub-Indicator 2 – water quality of lakes and artificial water bodies (Chl-a, TSS)**

## National (in situ) data

Level 2 data includes the following 3 Sub-Indicators:

- Sub-Indicator 3 – quantity of water (discharge) in rivers and estuaries
- *Sub-Indicator 4 – water quality imported from SDG Indicator 6.3.2*
- Sub-Indicator 5 – quantity of groundwater within aquifers

## Calculating National Percentage Change of Spatial Extent of Lakes, Rivers and Estuaries

To calculate percentage change of national spatial extent of lakes, rivers and estuaries using the 2001-2015 dataset, a baseline period needs to be defined against which to measure change. This methodology uses 2001-2005 as the 5-year baseline period. Averaging all earth observations annually and over a five year period accounts for seasonal and climactic fluctuations in water-related ecosystems. Using this baseline period, percentage change of spatial extent is calculated using the following formula:

$$\text{Percentage Change in Spatial Extent} = \frac{(\beta - \gamma)}{\beta} \times 100$$

Where  $\beta$  = the average national spatial extent from 2001-2005

Where  $\gamma$  = the average national spatial extent of any other subsequent 5 year period



## 2018...a new and 'IAEG approved' methodology formulated



- Statistically robust and comparable
- Global coverage
- National and sub-national relevance
- Quality assured
- Cost effective
- Reduce reporting burden

**TIER I**





SDG 6.6.1



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# Water-Related Ecosystems

Free and open access to national, sub-national, basin and sub-basin aggregated data on water extent.

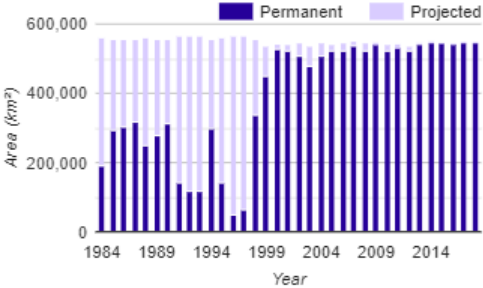


Sustainable Development Goal Target 6.6 seeks to halt the degradation and destruction of water-related ecosystems, and to assist the recovery of those already degraded. The target includes water-related ecosystems such as vegetated wetlands, rivers, lakes, reservoirs and groundwater, as well as those occurring in mountains and forests, which play a special role in storing freshwater and maintaining water quality.

[www.sdg661.app](http://www.sdg661.app)



Annual Water Surface Area - Russian Federation



(Experimental) Seasonal Water Surface Area - Russian Federation



Clear results

Display results as table

Download CSV

### Boundary Lines

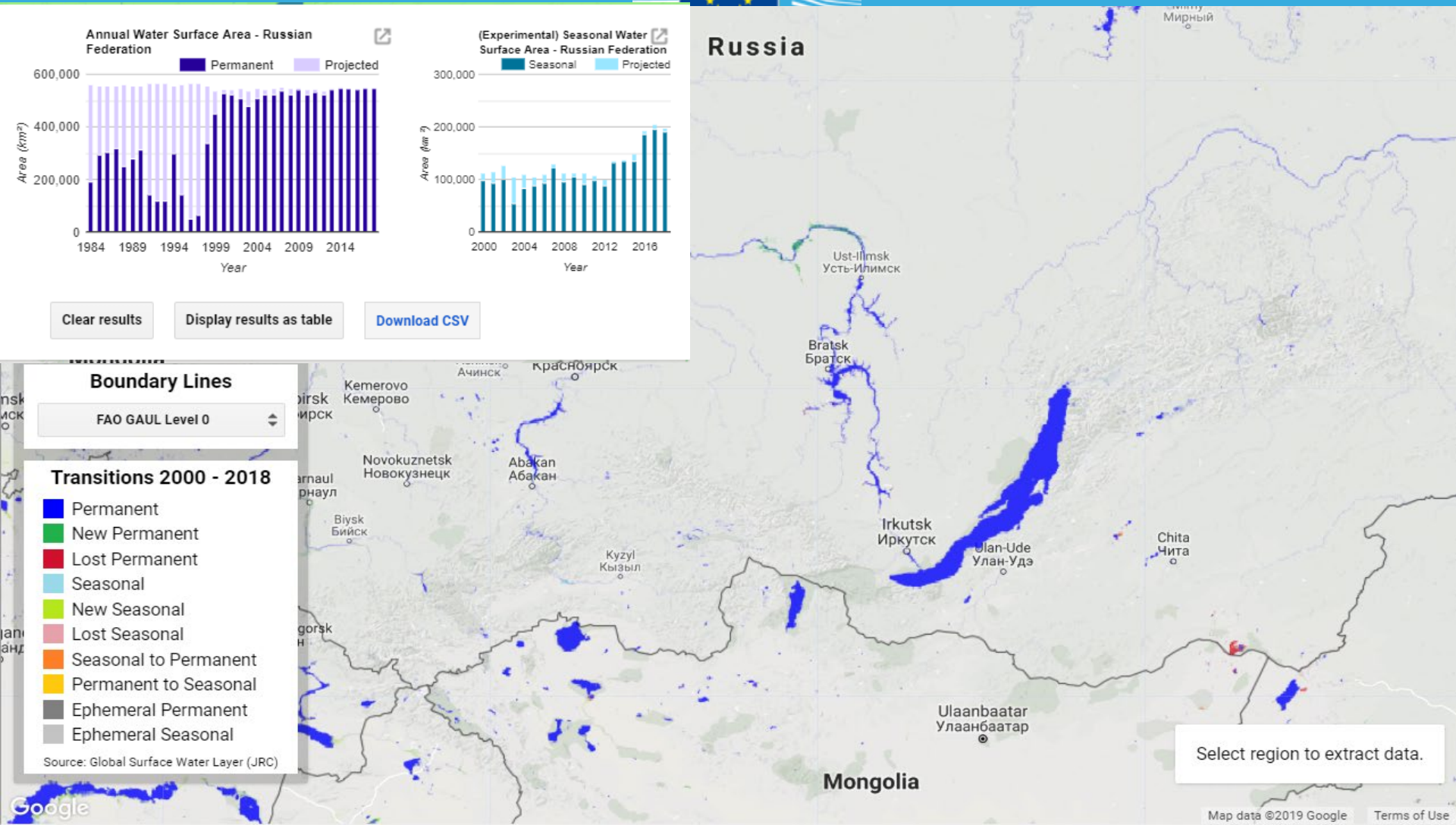
FAO GAUL Level 0

### Transitions 2000 - 2018

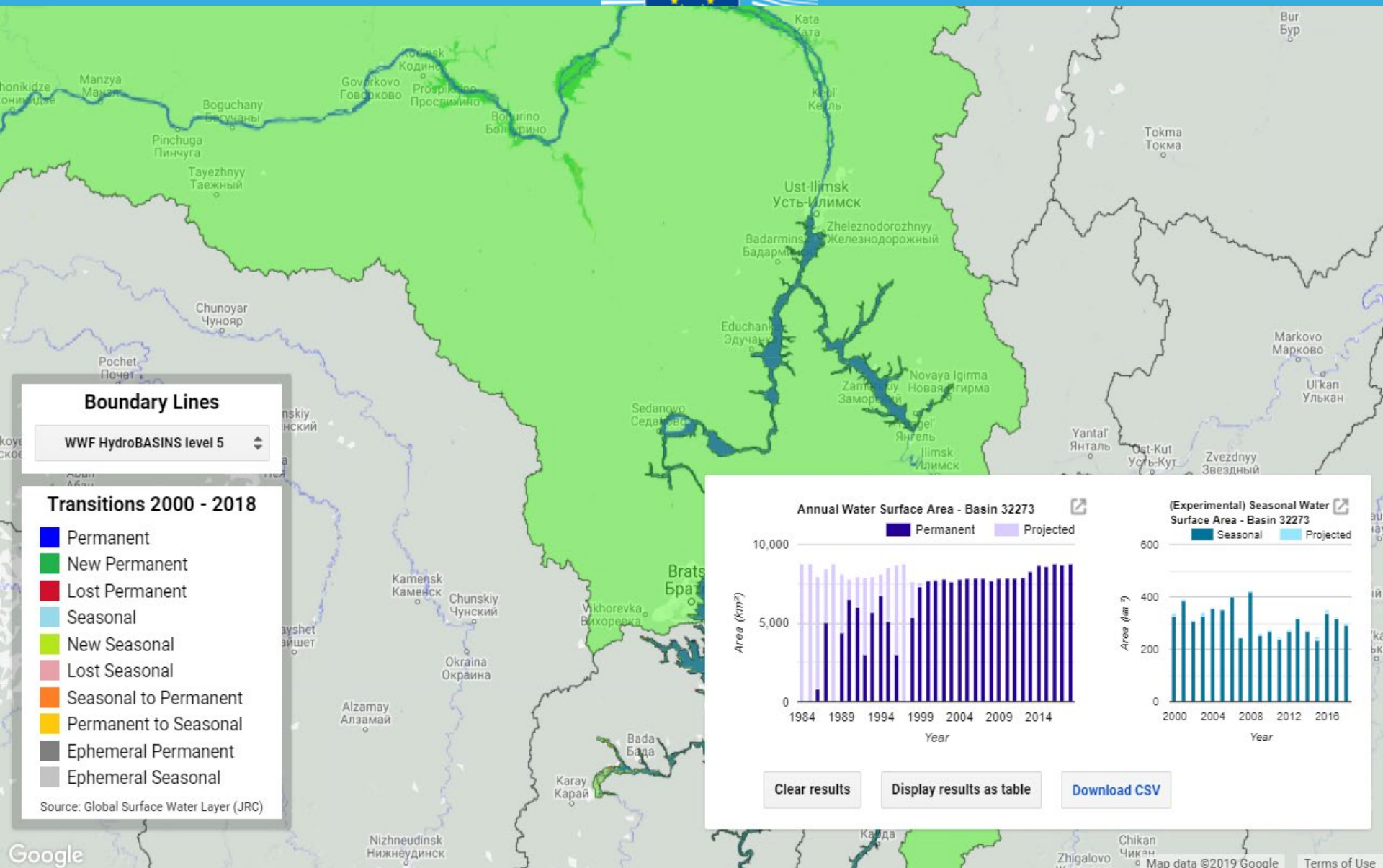
- Permanent
- New Permanent
- Lost Permanent
- Seasonal
- New Seasonal
- Lost Seasonal
- Seasonal to Permanent
- Permanent to Seasonal
- Ephemeral Permanent
- Ephemeral Seasonal

Source: Global Surface Water Layer (JRC)

## Russia



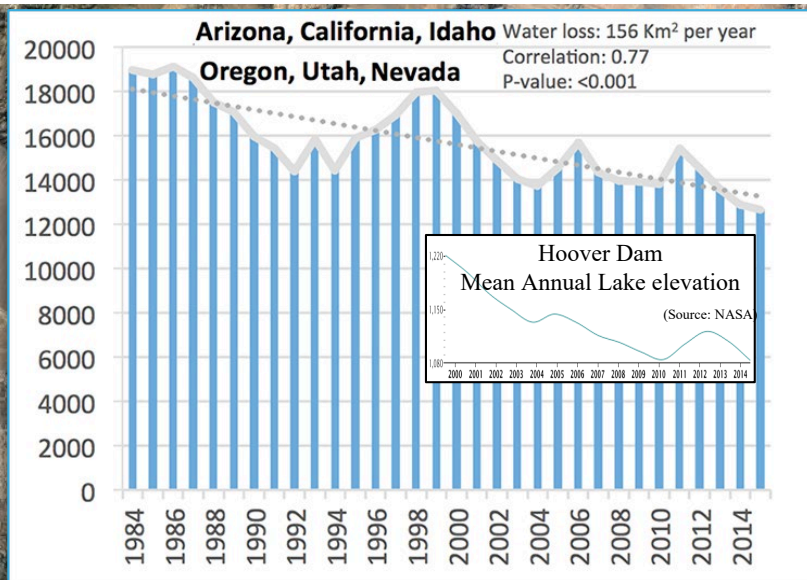
Select region to extract data.







## Drought and sustained demands for water have seen six western states lose more than 6,000 km<sup>2</sup> of their permanent surface water (33%)



Las Vegas

Lake Mead

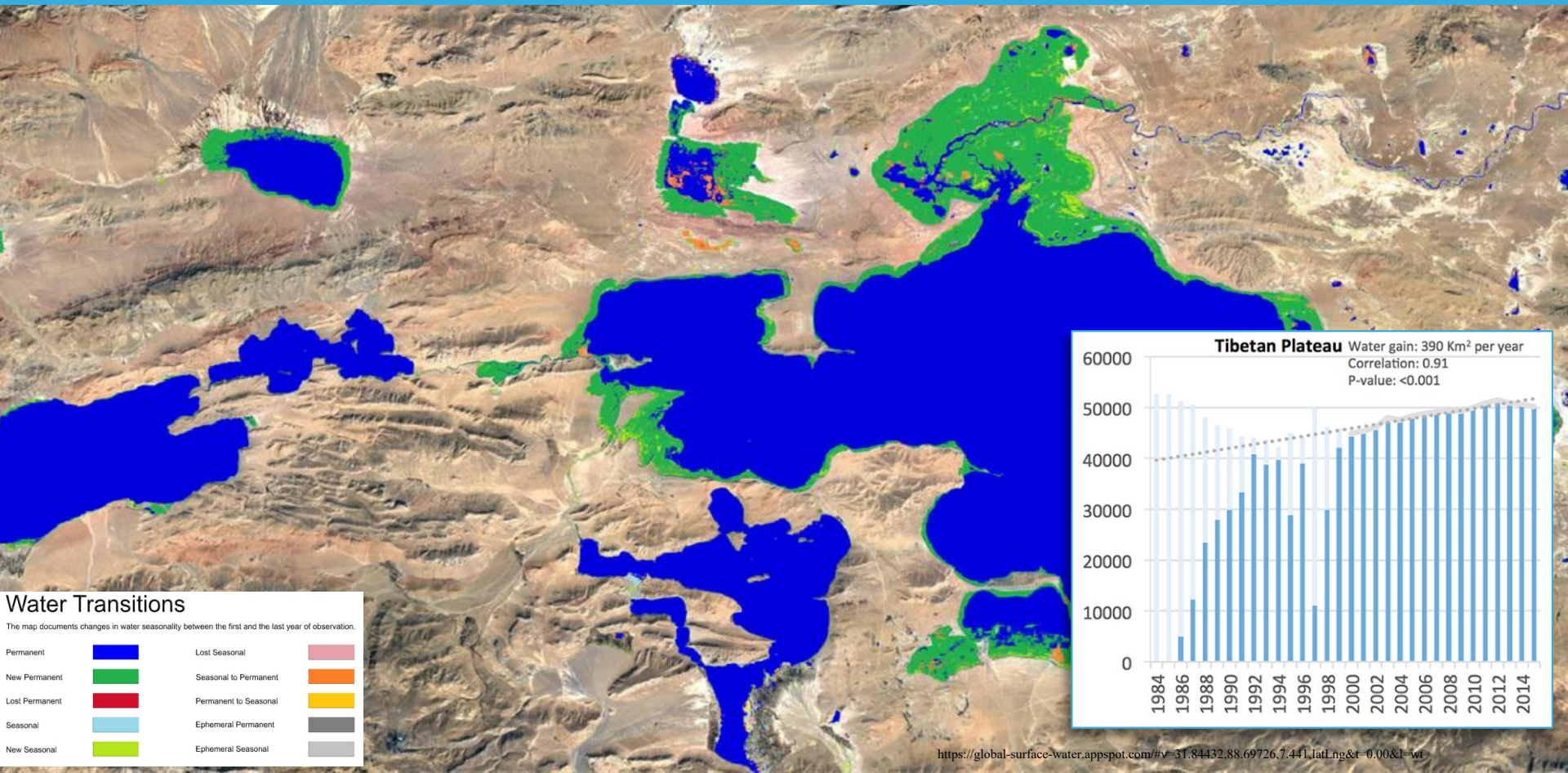






# Lakes on the Tibetan Plateau have **increased in area by 20%** with respect to the 1980s

## Grazing land is lost and transport links threatened







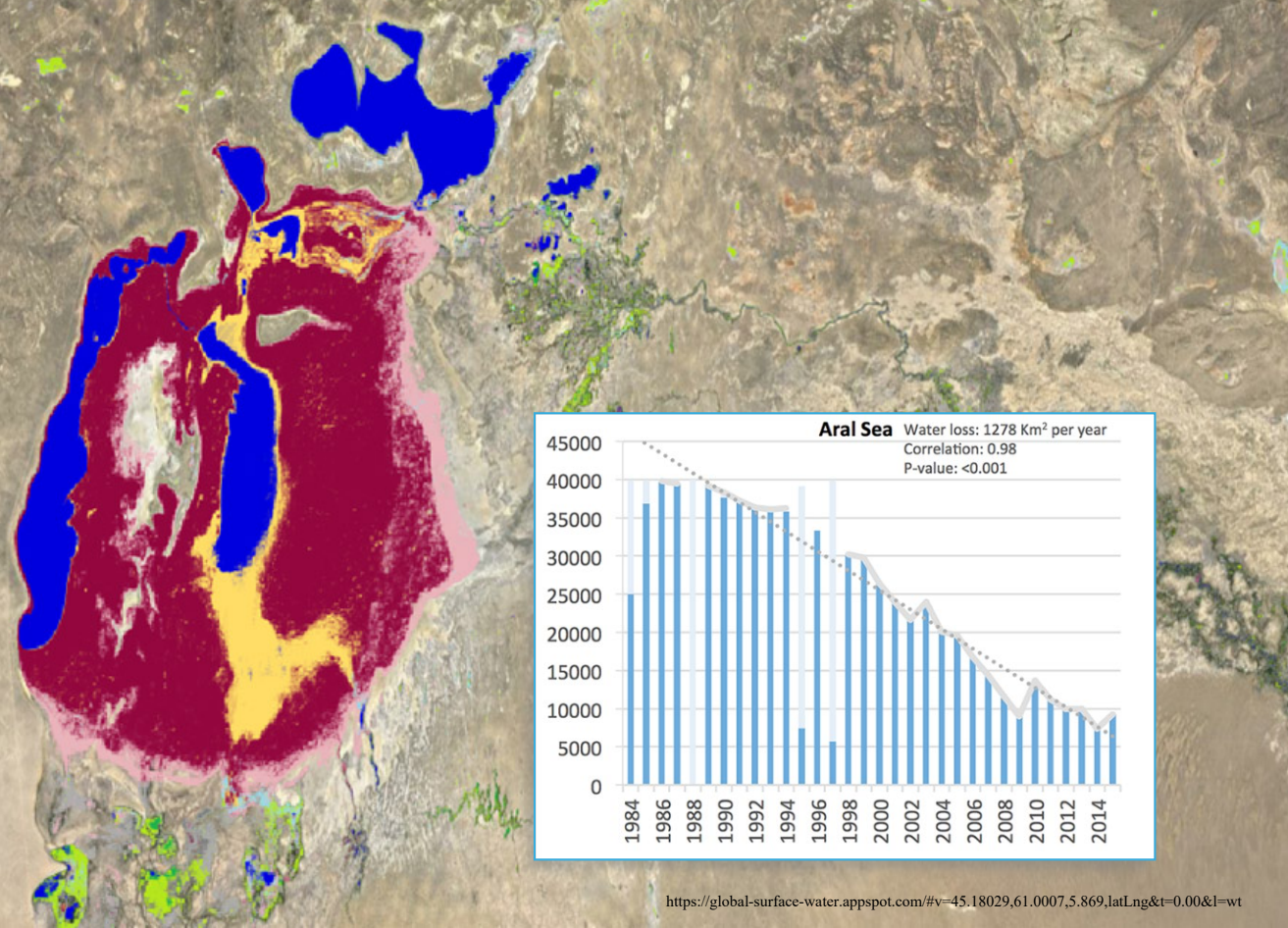
# The Aral Sea has **lost around 1,200 km<sup>2</sup> per year** since 1986

## Some recovery has been noticed since 2015

### Water Transitions

The map documents changes in water seasonality between the first and the last year of observation.

Permanent	Blue	Lost Seasonal	Pink
New Permanent	Green	Seasonal to Permanent	Orange
Lost Permanent	Red	Permanent to Seasonal	Yellow
Seasonal	Light Blue	Ephemeral Permanent	Dark Grey
New Seasonal	Light Green	Ephemeral Seasonal	Light Grey





## Meeting country requirements over the long term

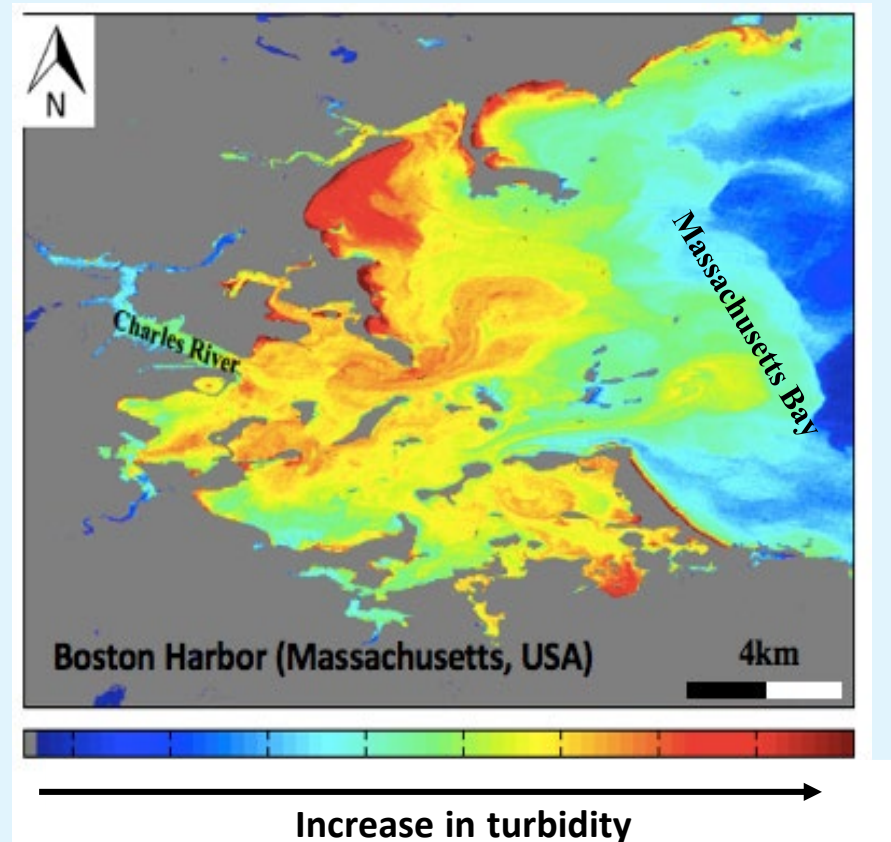
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- **Spatial extent of open water at *basin level* (*available now*)**
- **Delineation of reservoirs (*available Q2 of 2020*)**
- **Water dynamics (quantity) of reservoirs (*available Q2 of 2020*)**
- **Water quality of [large] lakes (*available Q1 2020*)**
- **Global mapping of vegetated wetlands (*rapid assessment possible in 2019*)**
- **Maps and statistics at decision making levels (national, basin, ecosystem)**
- **Guidance and training tools to accompany data provision (*2019-2020*)**

# Aquatic remote sensing: Turning an image into useful information

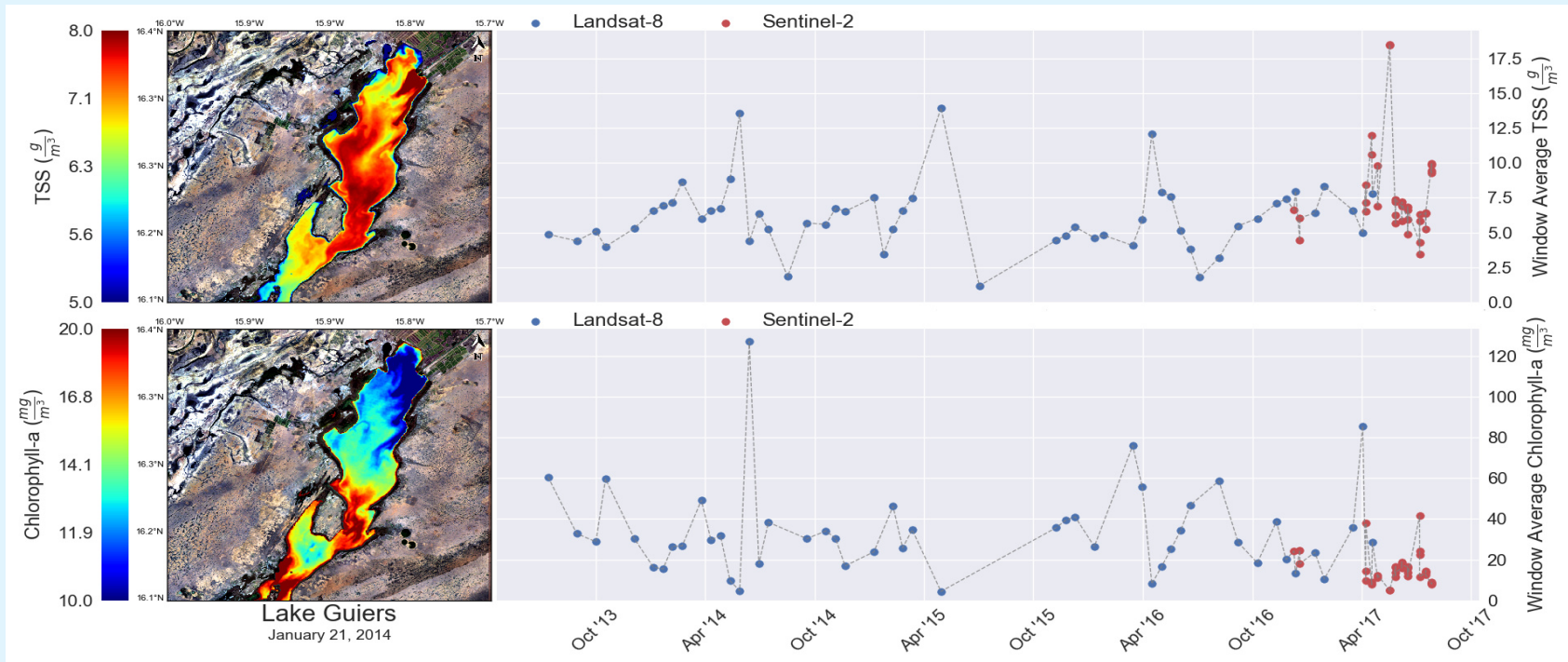


Boston Harbor,  
MA



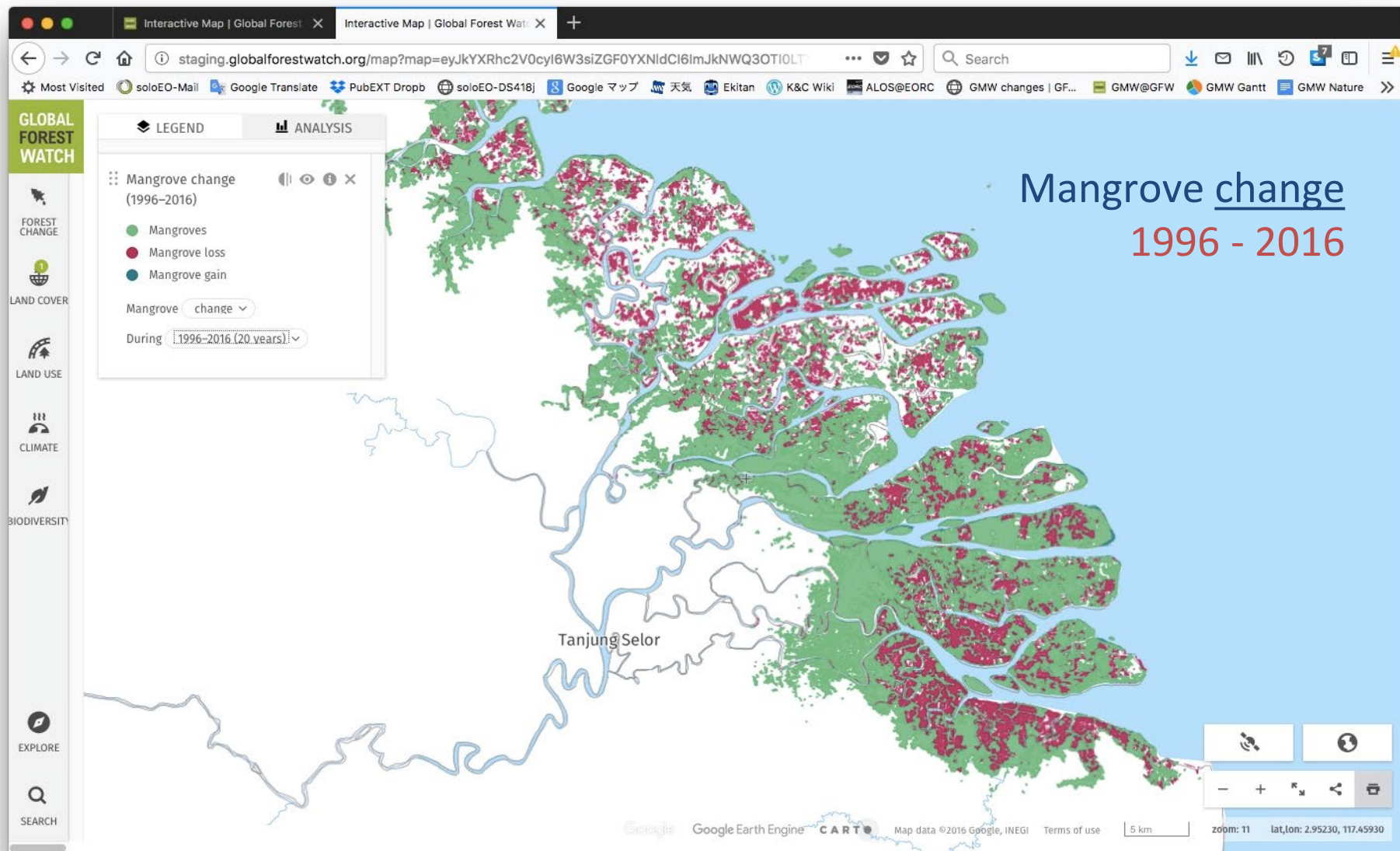


# Lake Guiers (Senegal)



# Global Mangrove Watch

A pilot project for the  
Ramsar Global Wetlands



Mr. Matthew Billot  
Senior Coordination Officer  
Science Division / Europe Office

Workshop on Statistics for SDGs  
Geneva, 17 April 2019



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