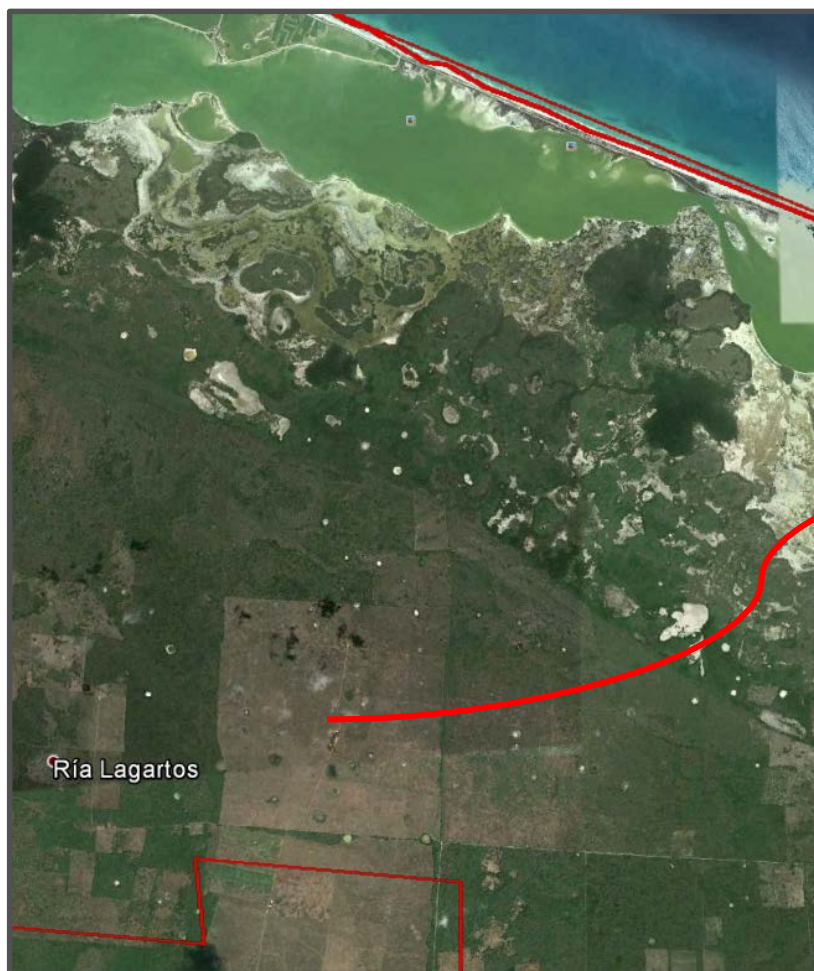
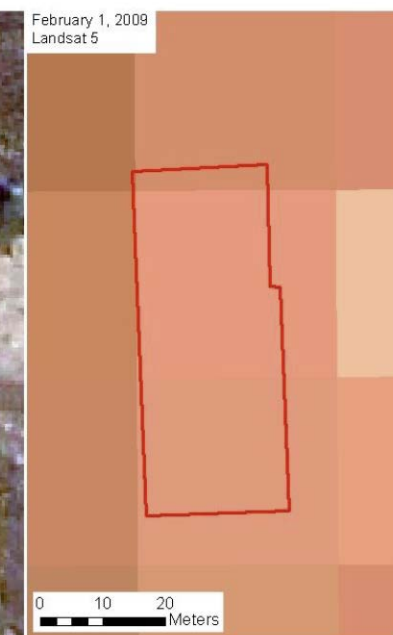




High resolution



Landsat

Challenge

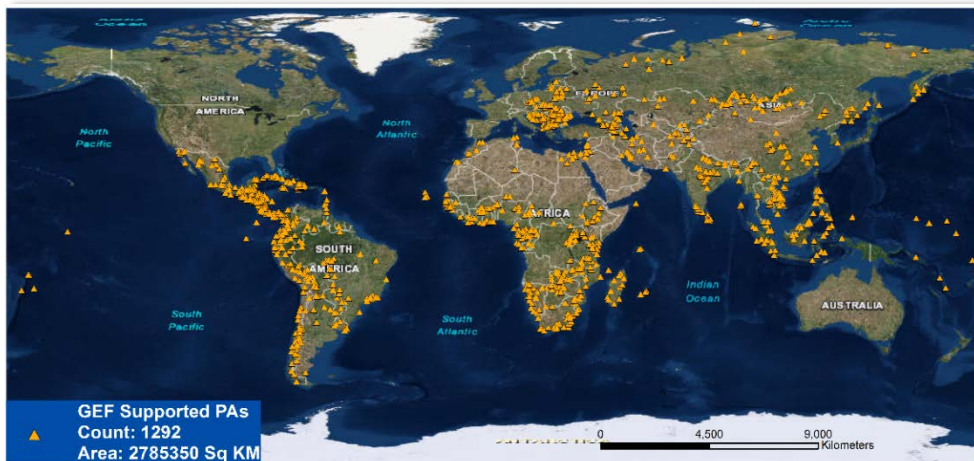
To identify drivers of protected area degradation in Ria Lagartos Biosphere Reserve and Monarch Butterfly Sanctuary, Mexico

Geospatial Solution

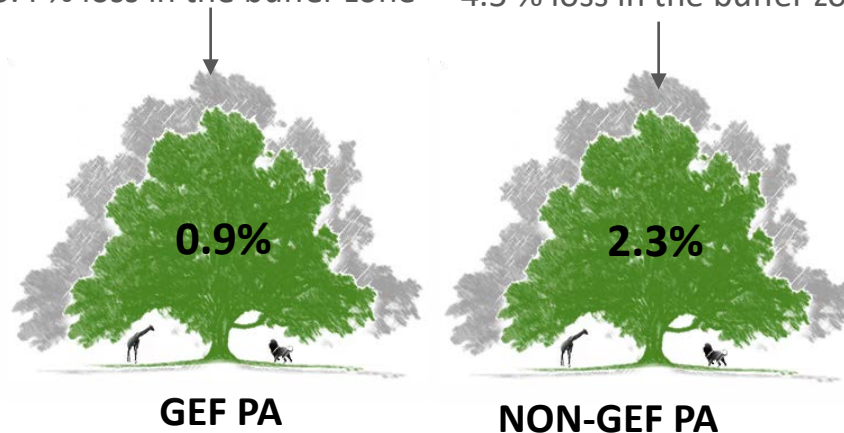
Analysis of high resolution commercial satellite data in collaboration with NASA's Goddard Space Flight Center. Object based classification was used for change detection.

Impact

- Animal grazing and illegal mining were identified as the main drivers of Protected Area degradation



3.4 % loss in the buffer zone 4.5 % loss in the buffer zone



Data are for 2001-2012, & within the same country and biome type

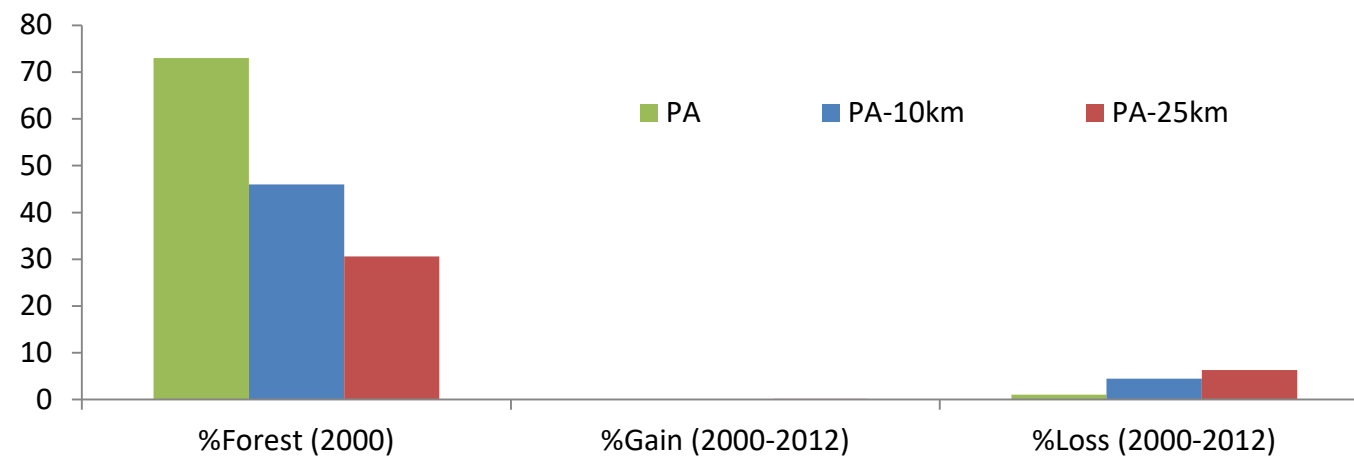
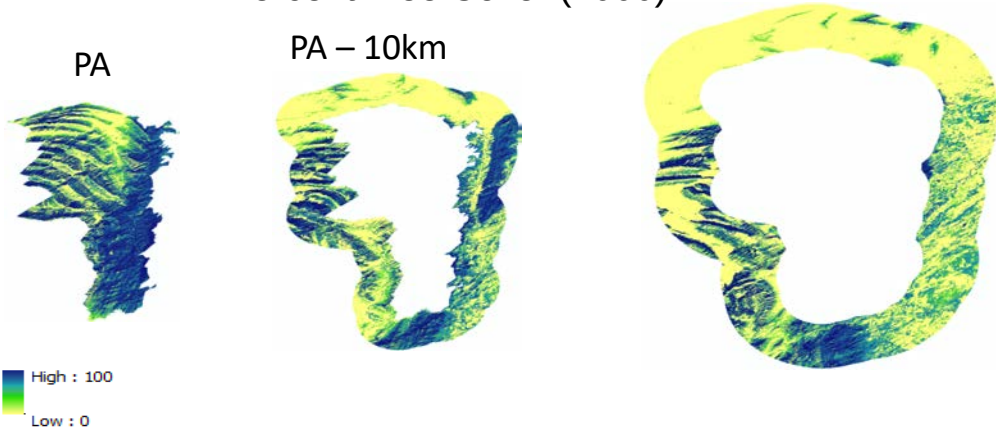
**TITLE: Assessing
forest cover loss in
GEF supported PAs
AUTHOR: Anupam
Anand
UNIT: GEFIO**

Percent Tree Cover (2000)

PA – 25km

PA – 10km

PA



Challenge

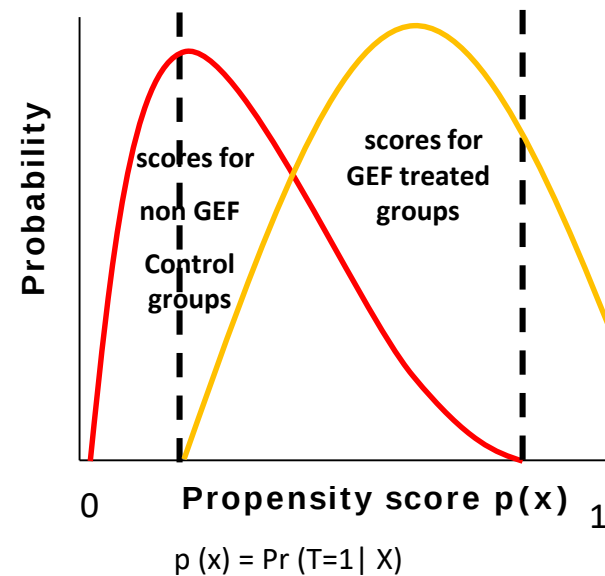
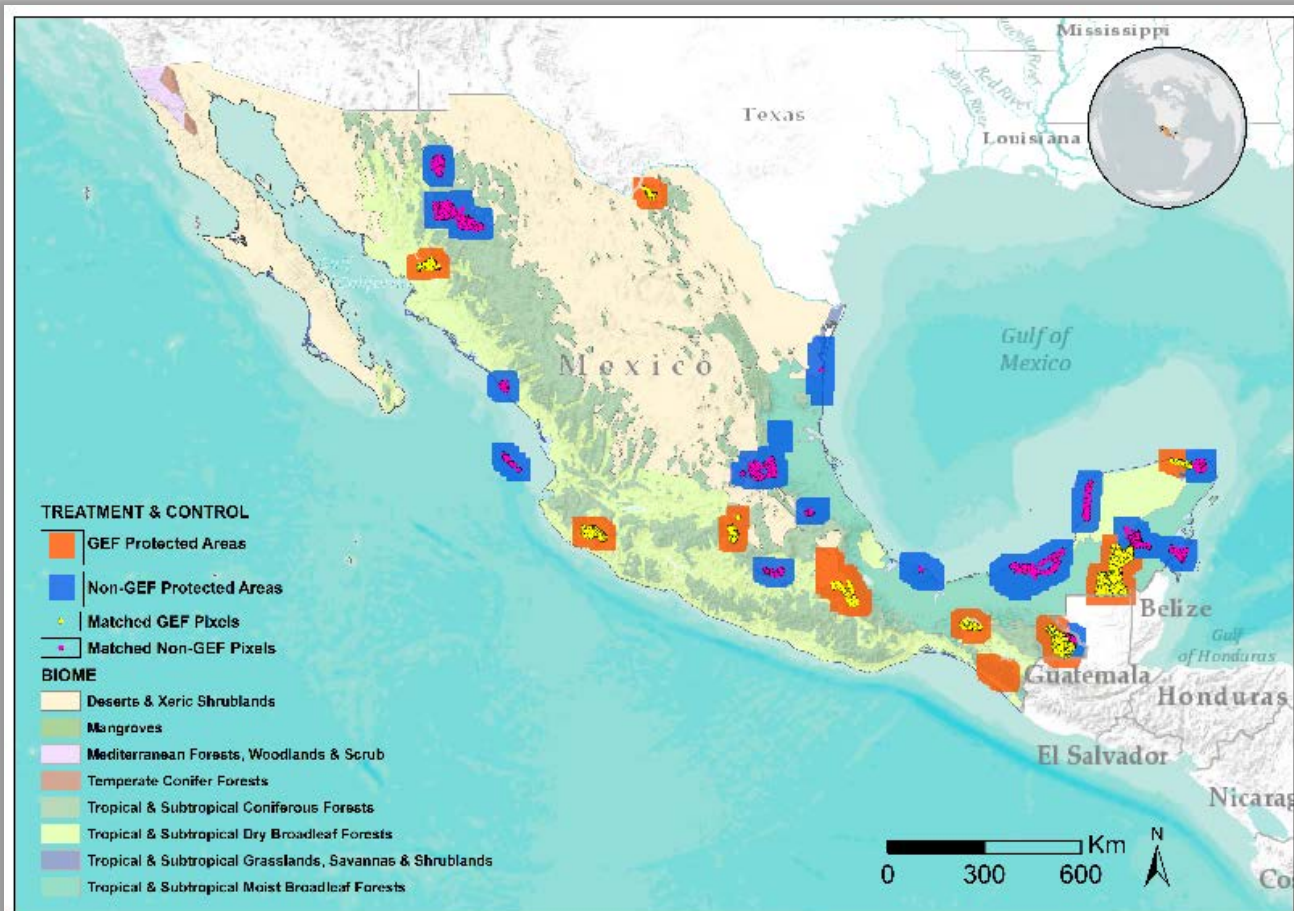
Study the impact of Global Environment Facility (GEF) support to 1292 global Protected Areas (PAs) across 147 countries.

Geospatial Solution

Forest Change analysis within the PAs and at varying buffer distance. Forest change analysis done for a total of 30,000 PAs across 147 countries.

Impact

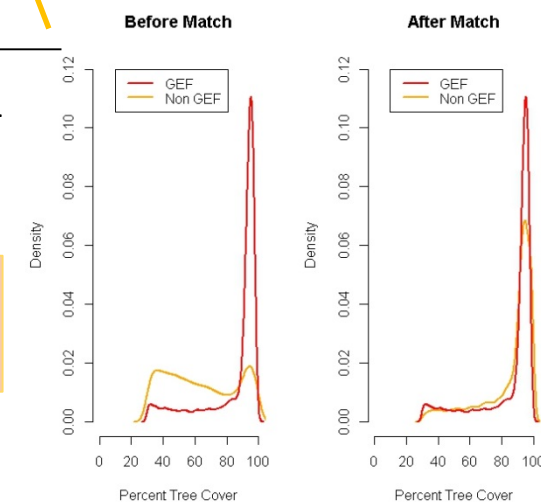
- Globally GEF PAs have slower forest loss
- The buffer zones of GEF PAs also have lower forest loss compared to non-GEF PAs



**Propensity score matching
for counterfactual selection**

**TITLE: Comparing the
effectiveness of GEF
support to PAs in
Mexico**

**AUTHOR: Anupam
Anand, Sumalika
Biswas(UMD)
UNIT: GEFIEO**



Challenge

To compare the impact of GEF support to Protected Areas in Mexico

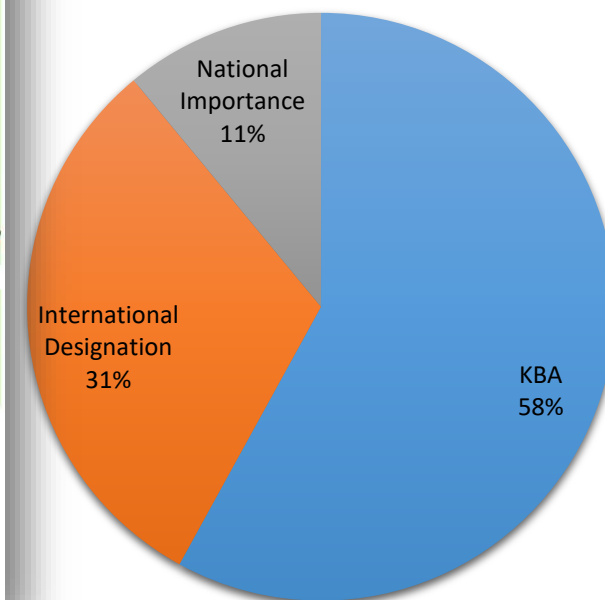
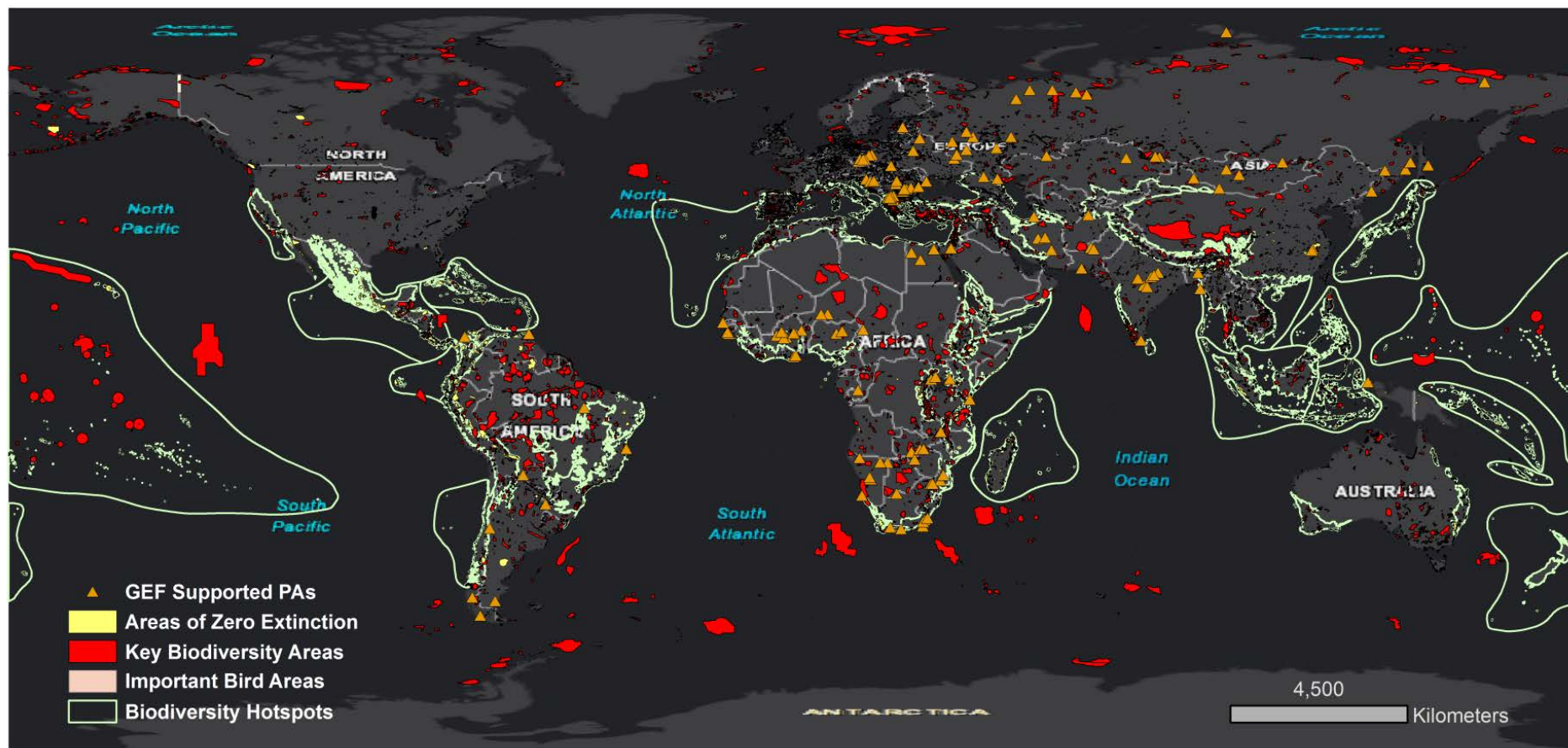
Geospatial Solution

Forest Change analysis based on the counterfactual sites obtained through propensity score matching.

Impact

- In Mexico, 23% less forest loss in GEF PAs versus non-GEF PAs.
- In Mexico up to 28% avoided forest loss in tropical and subtropical coniferous forest biomes.

TITLE: Are the GEF supported Protected Areas also located in areas of high biodiversity?
AUTHOR: Anupam Anand
UNIT: GEFIEO



Challenge

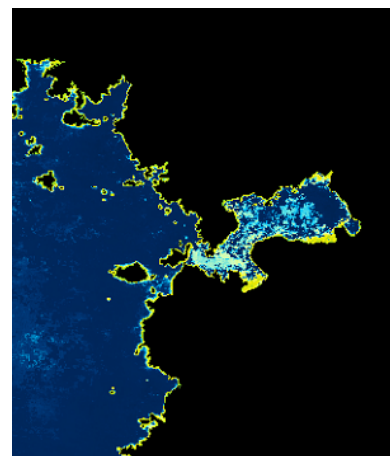
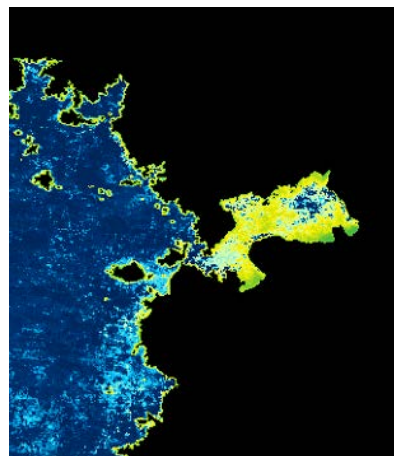
Are the GEF supported Protected Areas also located in areas of high biodiversity?

Geospatial Solution

Spatial analysis based on important biodiversity areas such as KEY BIODIVERSITY AREAS - highest scientific designation conferred to areas with biodiversity of global significance.

Impact

- 58 percent of GEF PAs are Key Biodiversity Areas
- 31 percent have other international designations such as Ramsar site & UN Heritage site.

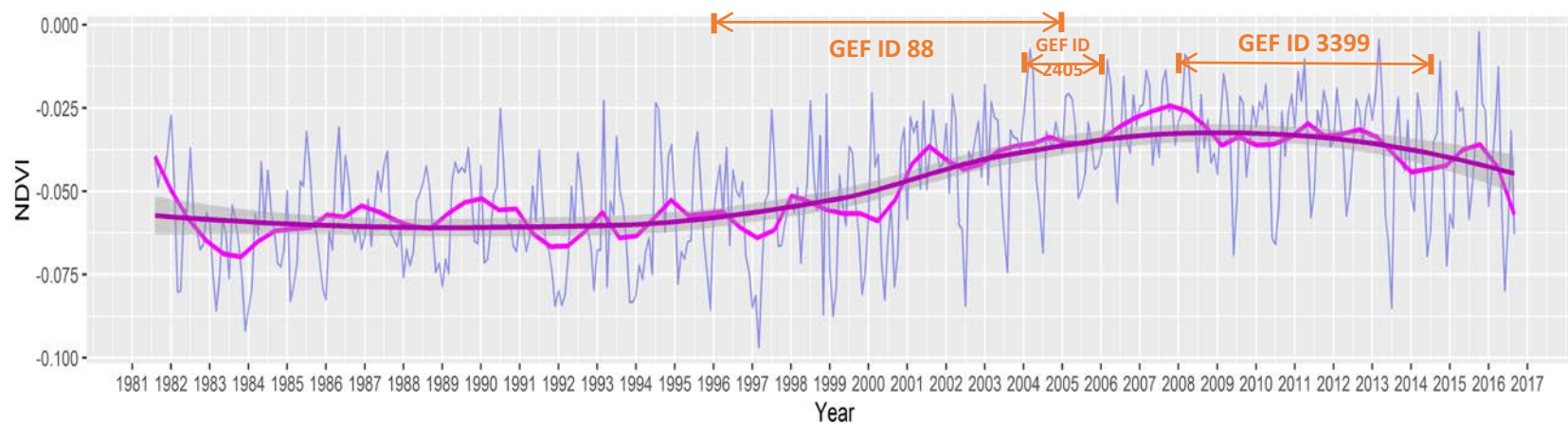
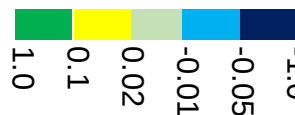


**TITLE: Temporal
changes in vegetation
productivity over Lake
Victoria**

**AUTHOR: Anupam
Anand**

UNIT: GEFIO

Annual median NDVI



Challenge

Assess the long-term impact of GEF support to the International Waters' projects at Lake Victoria which experienced severe eutrophication due to water hyacinth invasion beginning in the early 80s.

Geospatial Solution

- Temporal decomposition of time series data
- NDVI
- Data from MODIS and GIMMS v3.

Impact

By 2016, the vegetation productivity* at Lake Victoria came down to around 20% of the levels in 1981.

*Indicator for eutrophication

43.52
Tons carbon
sequestered
per hectare

\$7,500000
Contribution
from
Sequestered
carbon

TITLE: Value for Money Analysis
for GEF land degradation projects
AUTHOR: Geeta Batra, Anupam
Anand, Dan Runfola
UNIT: GEFIO

Causal trees analysis

