



NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL



The effectiveness of wetland restoration and identifying threats via monitoring wetland use intensity – case study from Rwanda

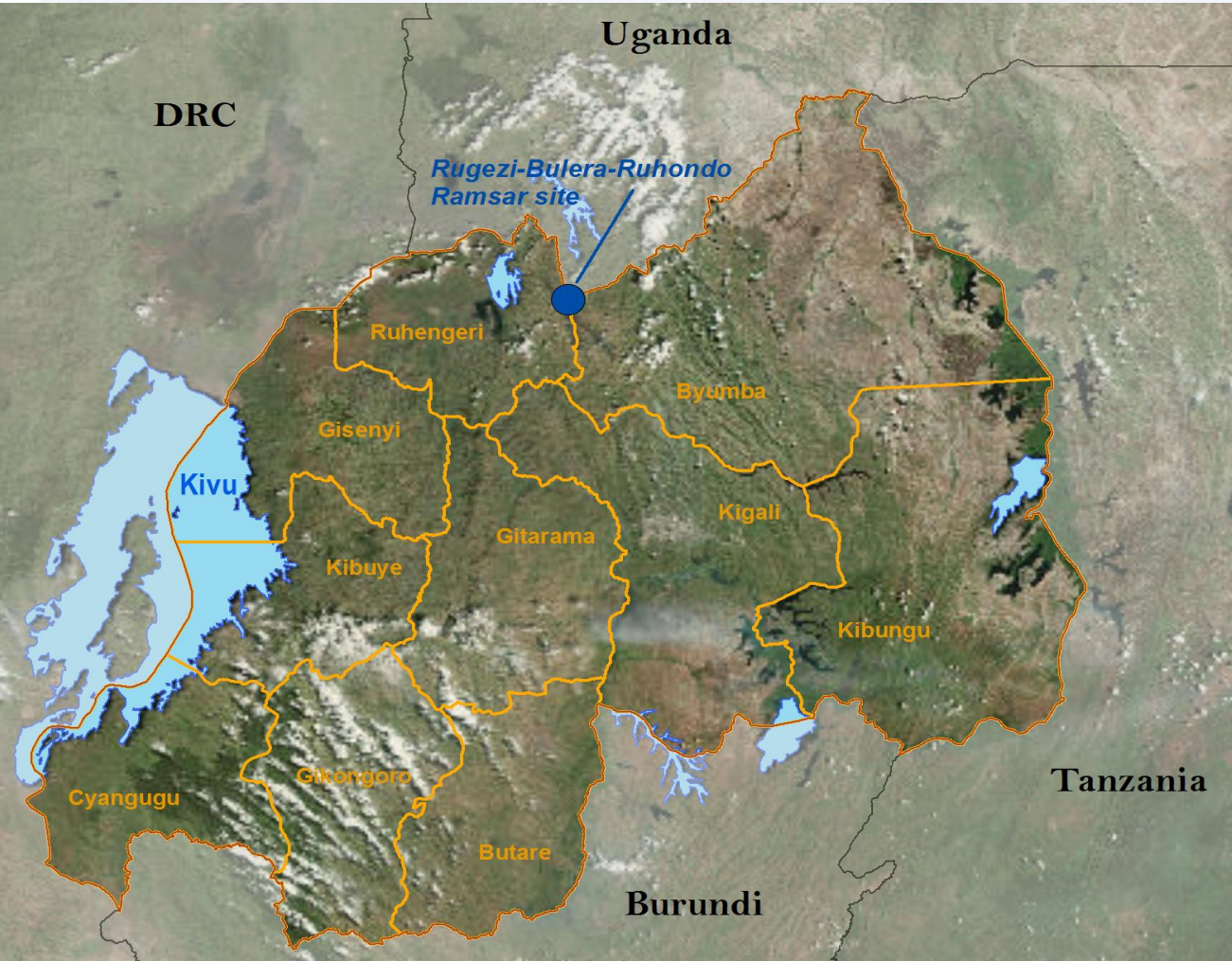
Jonas Franke, *Remote Sensing Solutions GmbH*
Konrad Hentze, Stefanie Steinbach & Adrian Strauch, *University of Bonn, Germany*



universität**bonn**

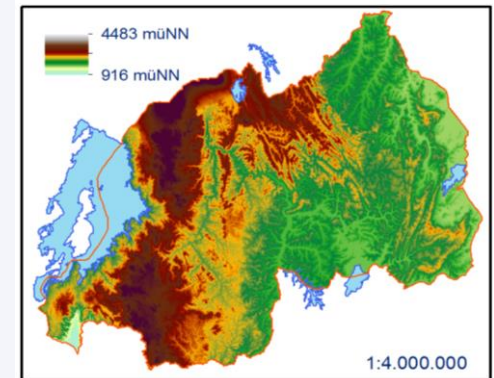
Introduction

- Rwandan wetlands are integral to both, national development action plans and nature protection frameworks
- Anthropogenic pressure leads to an intensification of wetland use
- In 2008, a national wetland inventory with the attributes 'unconditional use', 'conditional use' and 'protected' was created
- To prioritize and plan interventions and to monitor the effectiveness of protection measures, up-to-date country-wide information is needed
- The project DeMo-Wetlands demonstrated how European Copernicus data can be used for wetland inventory and monitoring



DeMo Wetlands Copernicus-based
Detection and
Monitoring of
tropical Wetlands

Rwanda



Wetland types and uses

Protected wetlands



Peatlands (Ramsar site)



Food production



Peat extraction



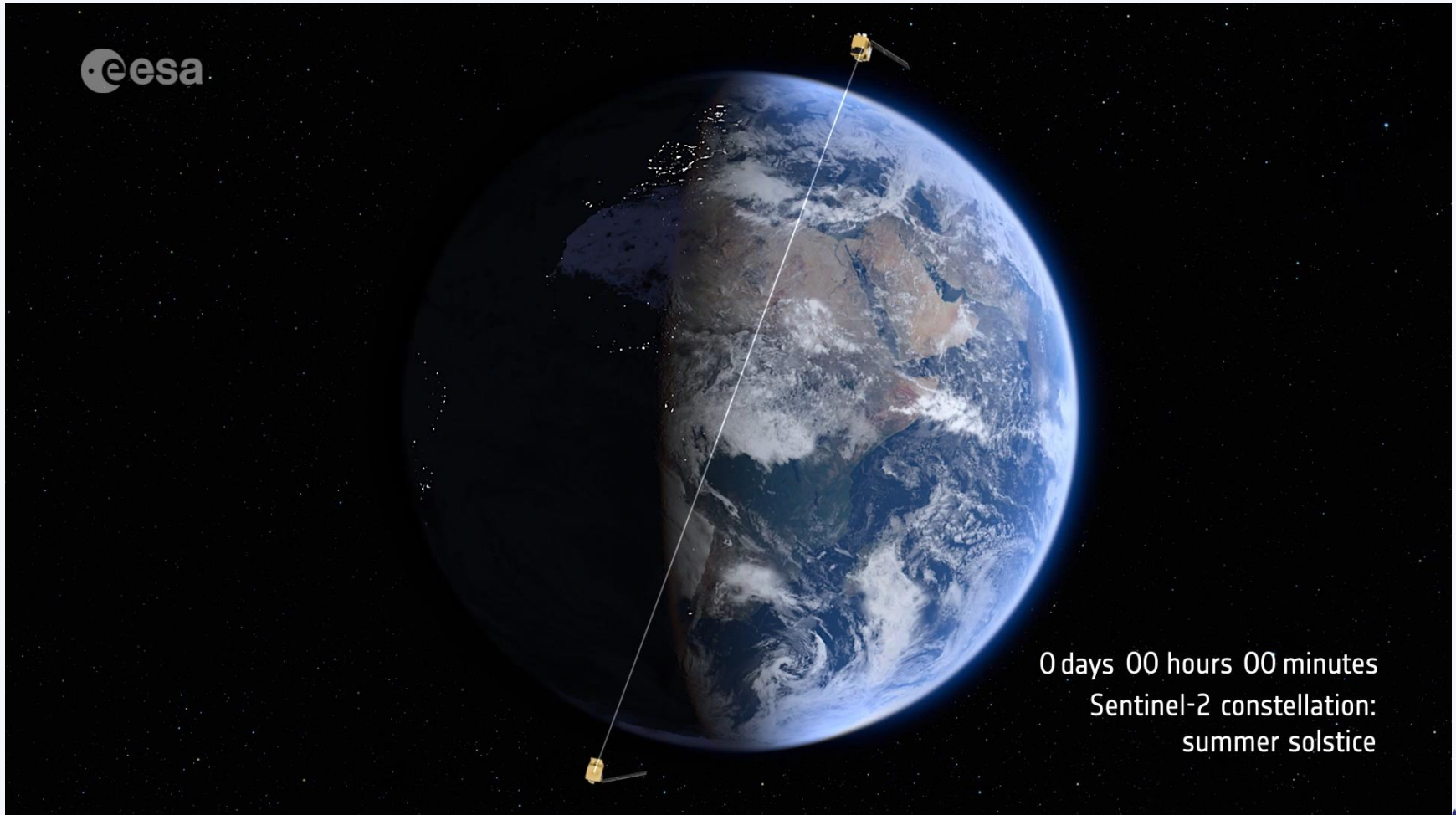
Intensive agriculture



Natural status



Copernicus

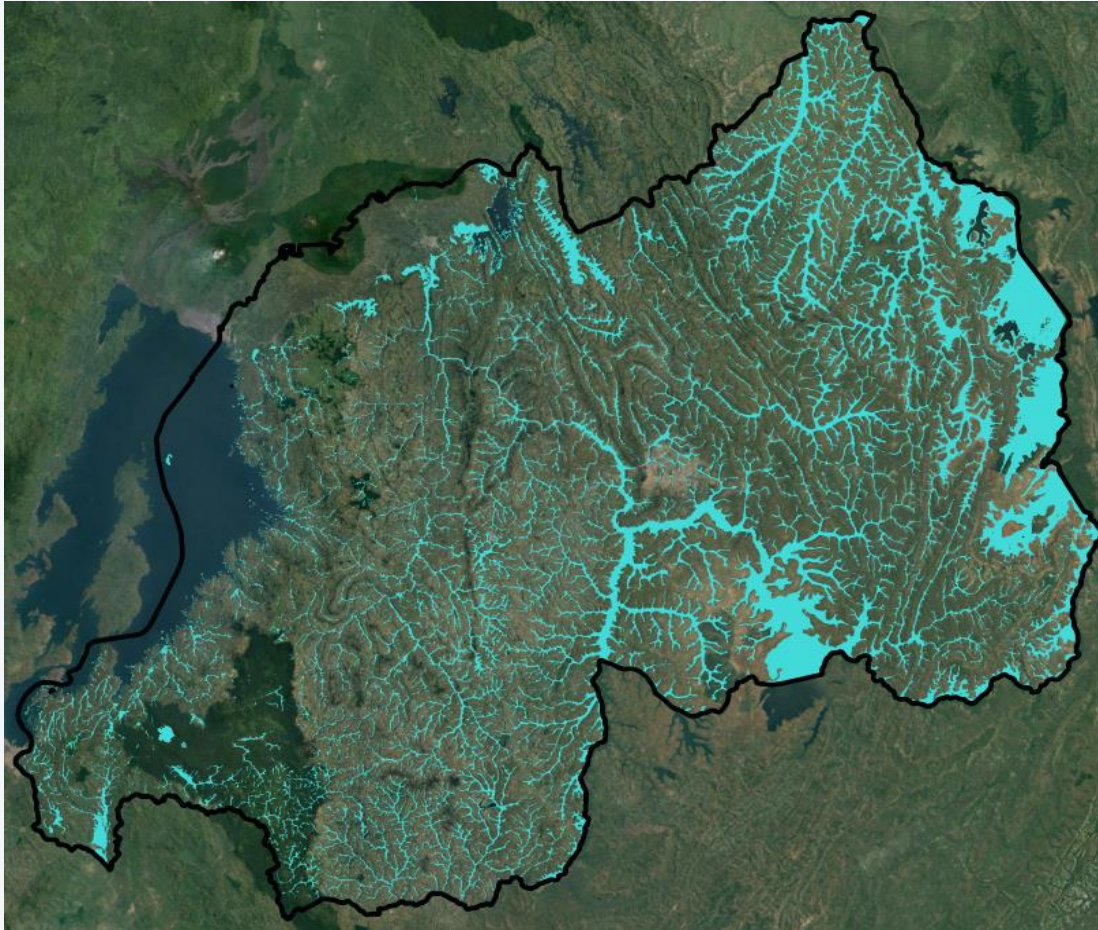


0 days 00 hours 00 minutes
Sentinel-2 constellation:
summer solstice

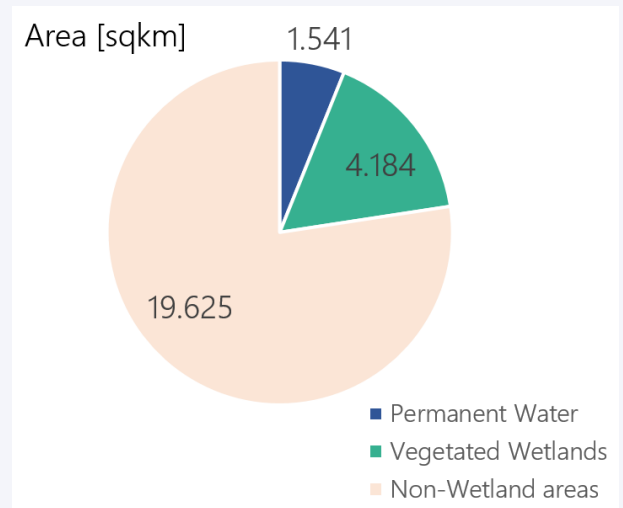
Wetland Geo-Information



Support of SDG monitoring & reporting



SDG indicator 6.6.1 – sub-indicator 1:
Spatial extent of water-related ecosystems



Wetland use intensity



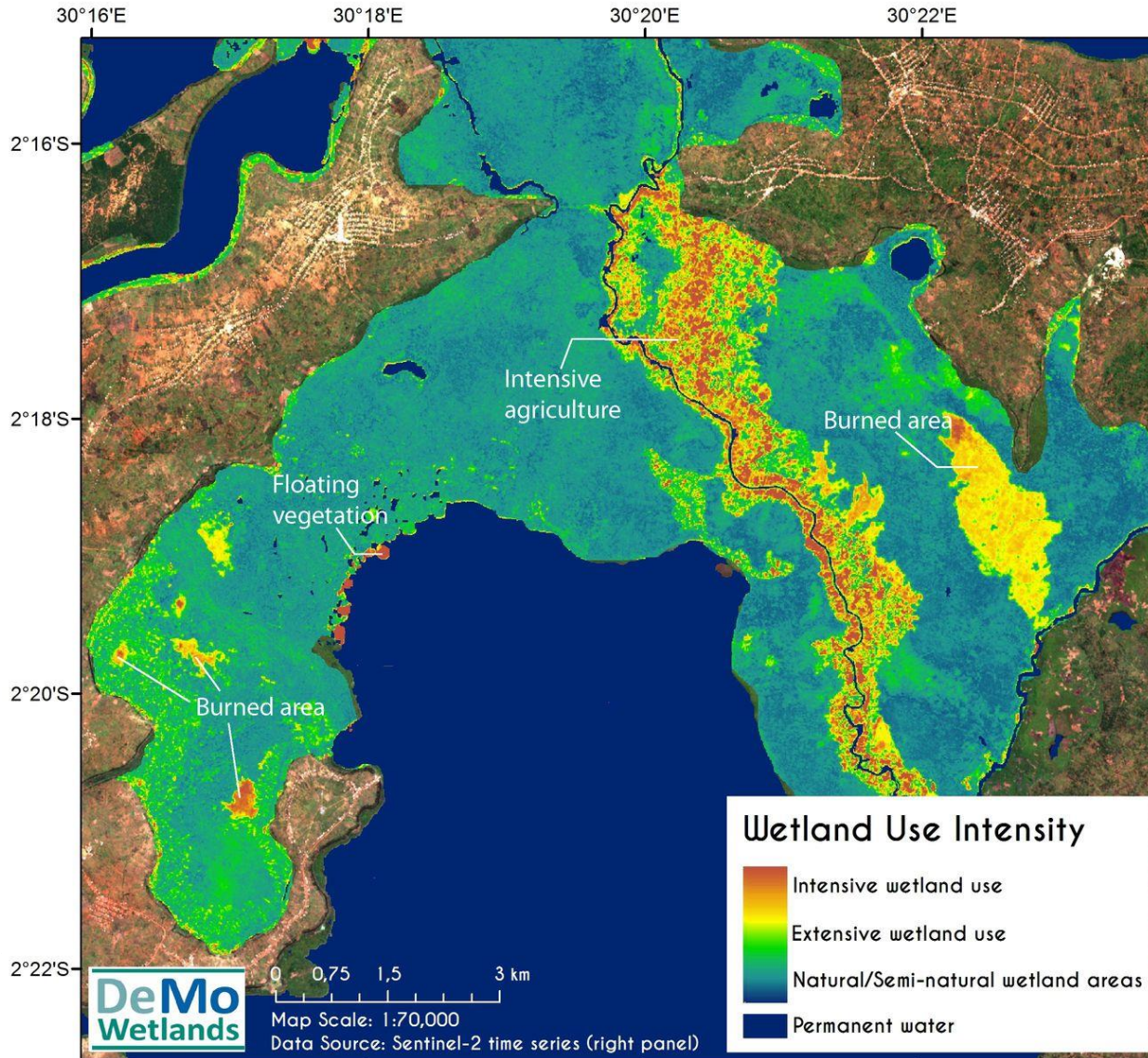
Purpose: Assessment of wetland status and identification of threats.

Input data: Sentinel-2 and Sentinel-1 time series.

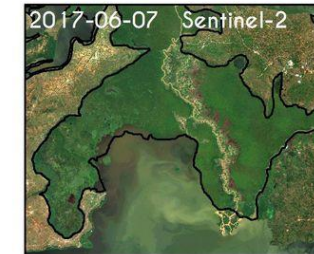
Methodology: The used algorithm for time series analysis (mean absolute spectral dynamics) was modified from Franke et al. 2012 to adopt to wetland ecosystems.

Result: The Wetland Use Intensity layer differentiates intensively used areas such as agriculturally used areas, from less intensively used areas, natural/semi-natural areas and permanent water.

Results



Rweru Wetland



Interactive map



<https://www.remote-sensing-solutions.com/DemosWetland/DeMo-Wetlands.html>

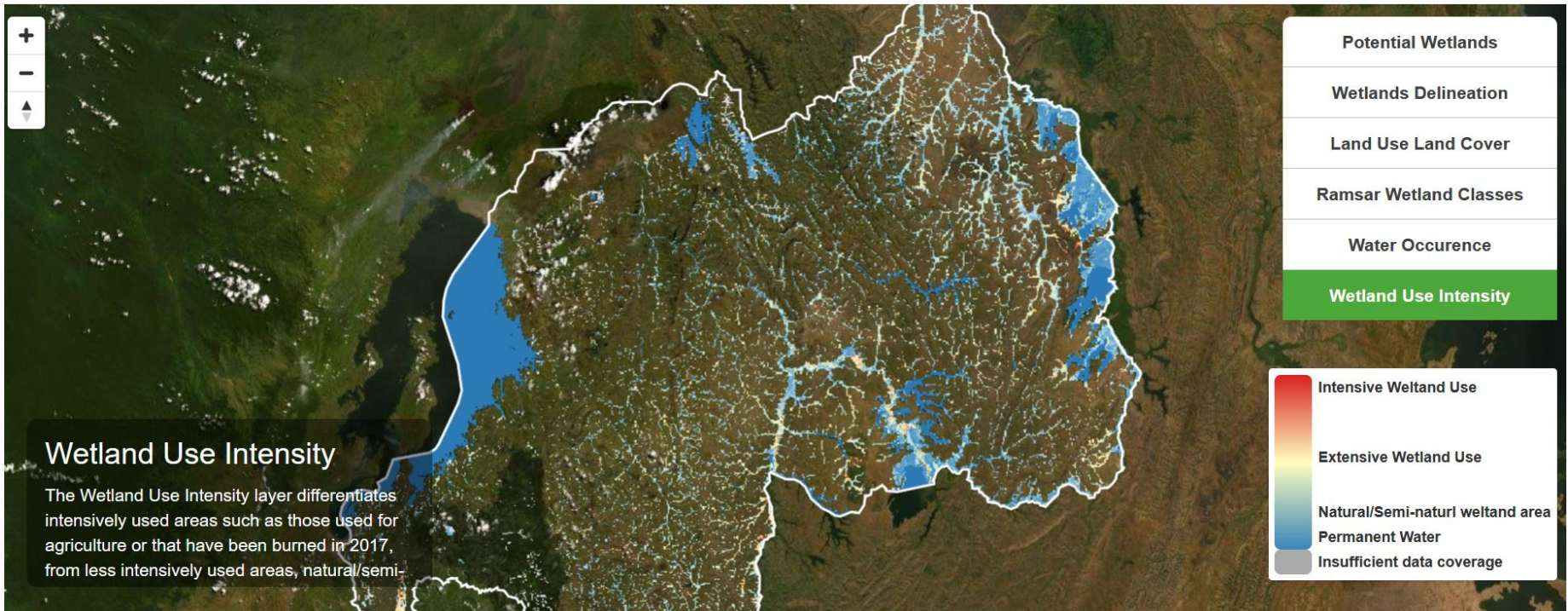
DeMo-Wetlands
Satellite-based Detection and Monitoring
of tropical Wetlands



universität**bonn**

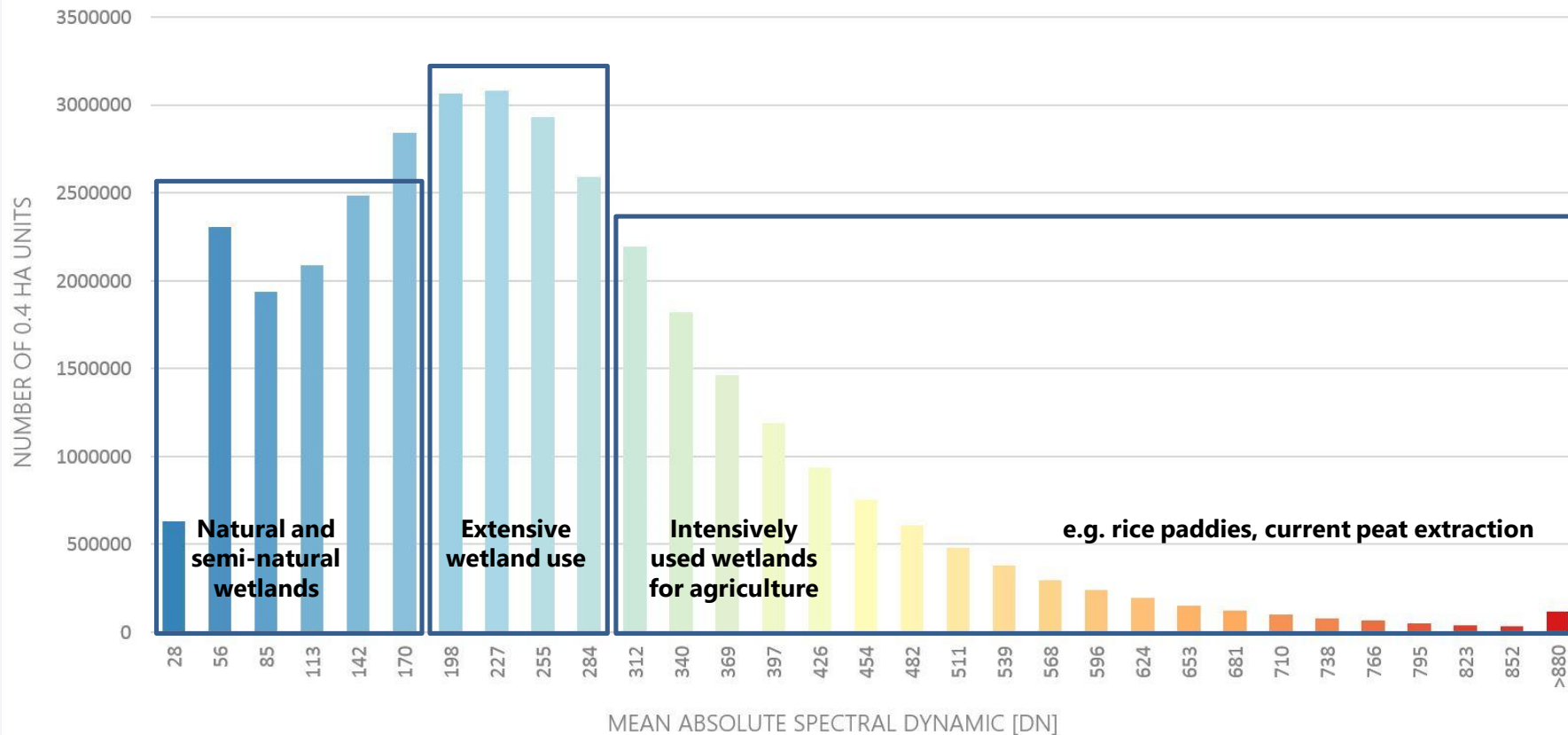


Supported by:
Federal Ministry
for Economic Affairs
and Energy
on the basis of a decision
by the German Bundestag



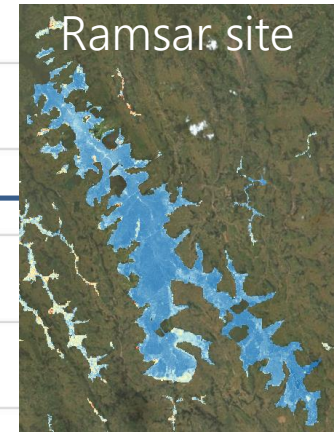
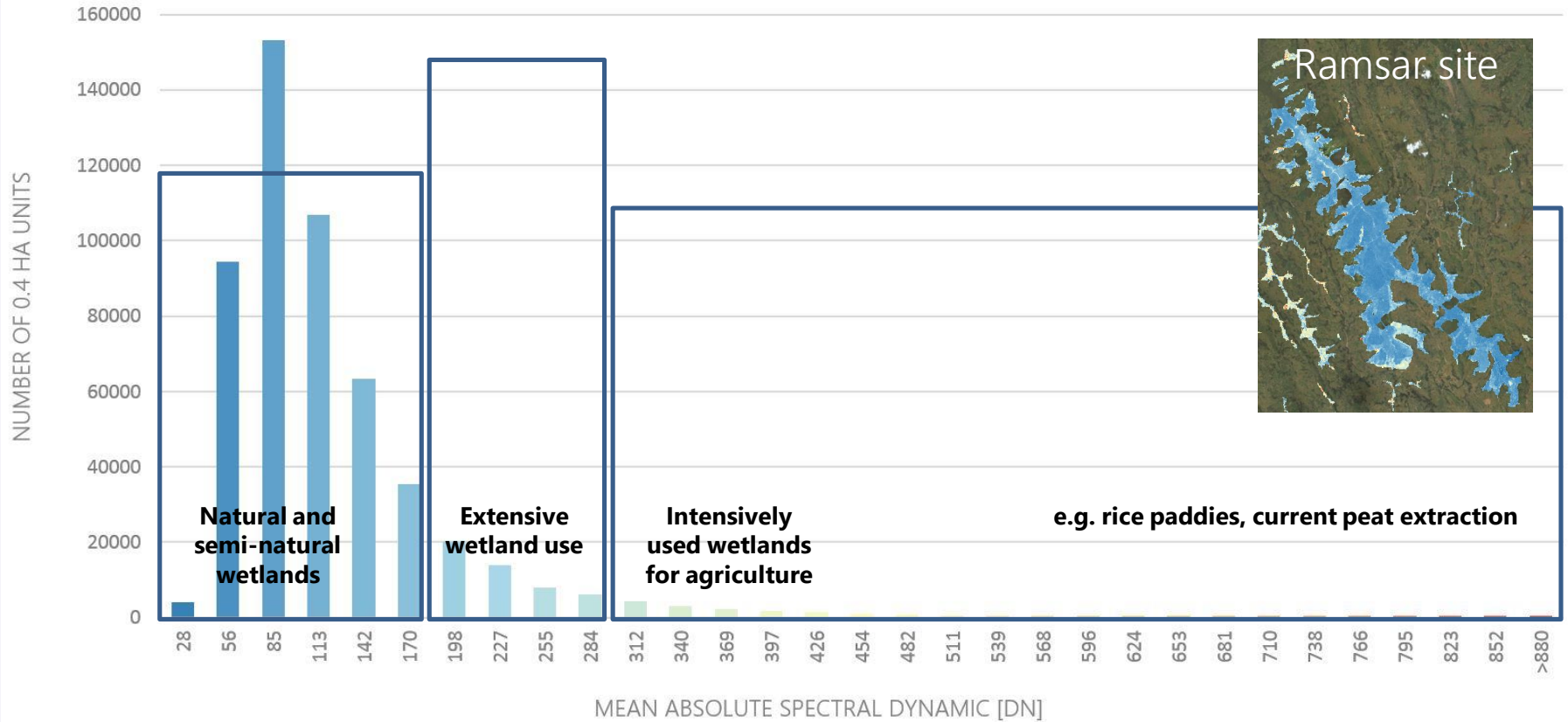
Wetland use “footprint”

Footprint of Wetland Use Intensity in Rwanda



Wetland use “footprint”

Footprint of Wetland Use Intensity in Rugezi-Burera-Ruhondo



Key actionable recommendations



- *The Nile Basin Initiative is covering a large area. To get the full picture continuously, make use of the freely available Copernicus data that can support many NBI activities.*
- *Wetlands can be observed at high temporal resolution, which allows to go far beyond land cover information*
- *Mapping the land use intensity is an innovative mean that can support the prioritisation of protection measures, identify threads, and to control the impact of protection measures (e.g. peatland restoration)*



NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

THANK YOU!

Contact:
franke@rssgmbh.de

