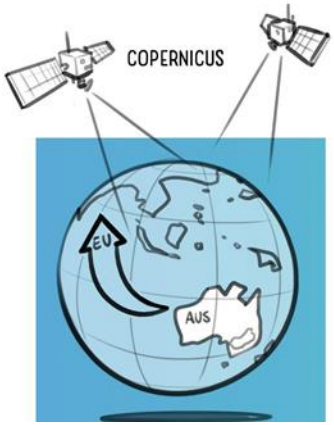


WaterSENSE Making SENSE of the water value chain in Australia

www.watersense.com.au
#MakingWaterSENSE

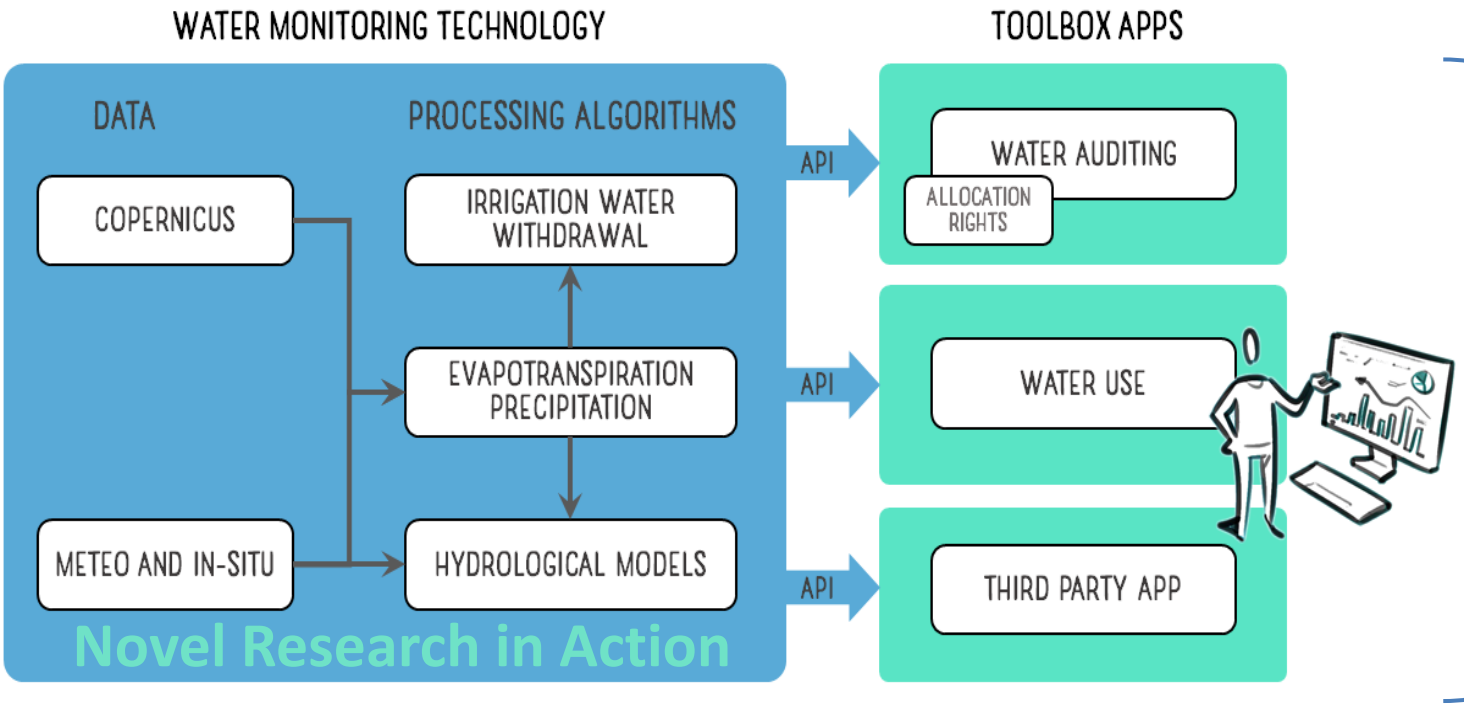
1 January 2020 – 31 December 2023
Budget 3.5M AUD

LinkdIn: Project WaterSENSE
Twitter: @MakeWaterSENSE

This project has received funding from the Horizon 2020 research and innovation programme under grant agreement No 870344

WaterSENSE Concept – WaterSENSE Toolbox

1. Water Monitoring System: Modular, operational, Integrates Copernicus EO data, ground radar, models, in-situ data;
2. Water Management Toolbox: makes data and services available to users.
   - Various Apps provides reliable, actionable Information



Examples:

Water resource mapping, water availability forecasting, calamity monitoring

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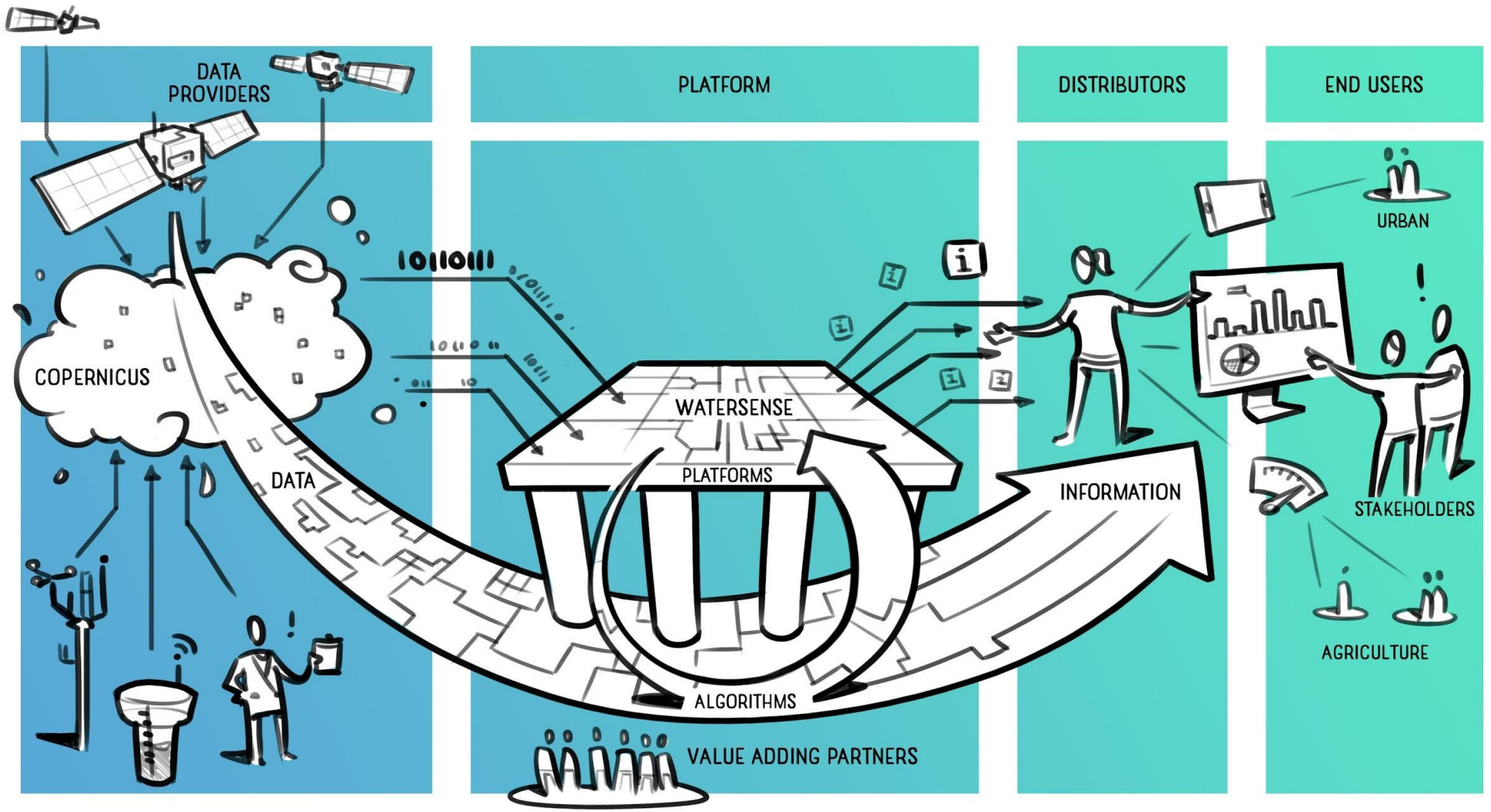
WaterSENSE Supply Chain Model



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Example Application

Water Use and Compliance Monitoring

- Demonstration Partner DPIE and NRAR
  - Namoi Catchment
- Satellite based compliance check
- Compares the actual crop evaporation (due to irrigation) with the allowed water
- Easy identification of big water users
- Per field or larger unit

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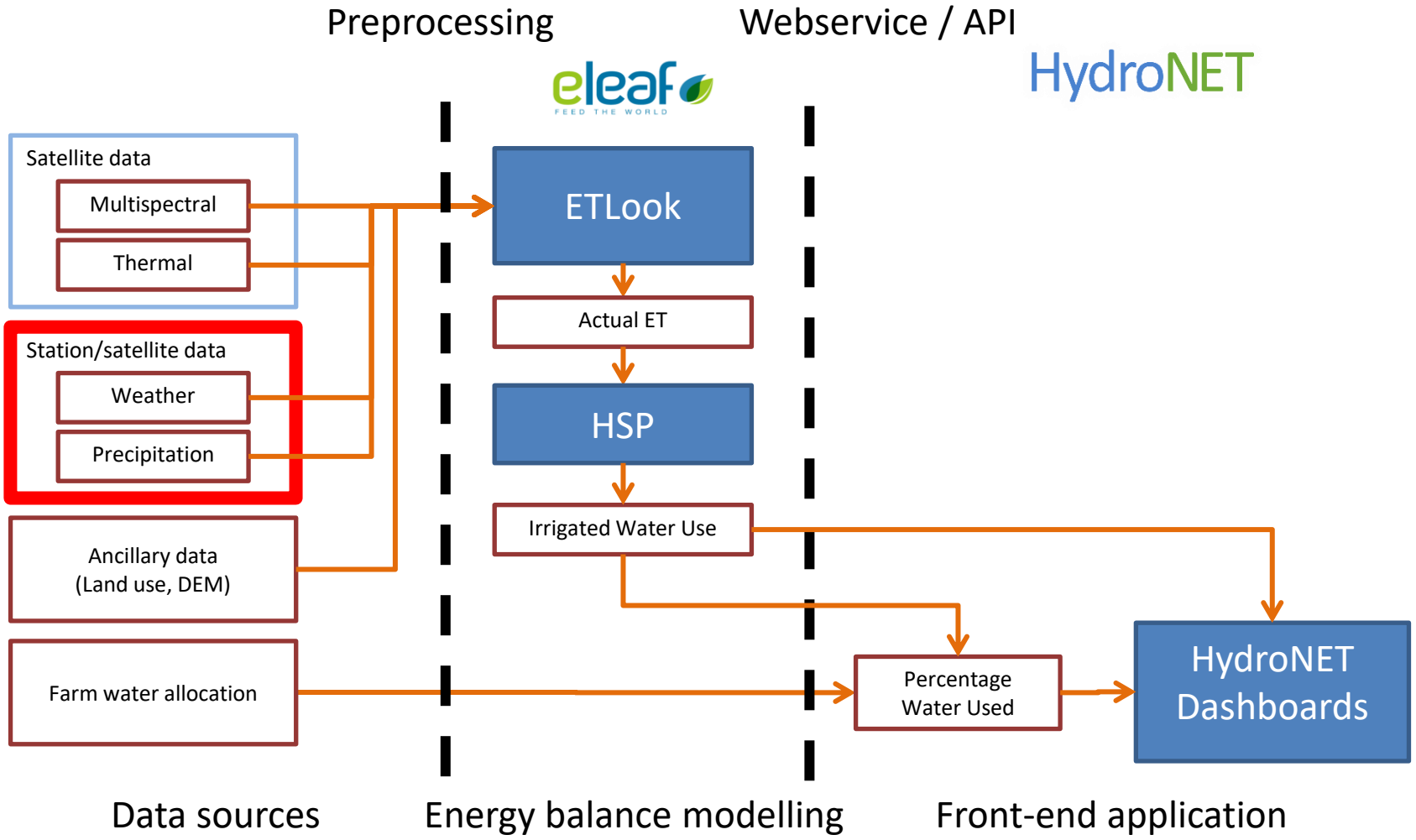
How do we calculate Irrigated Water Use?



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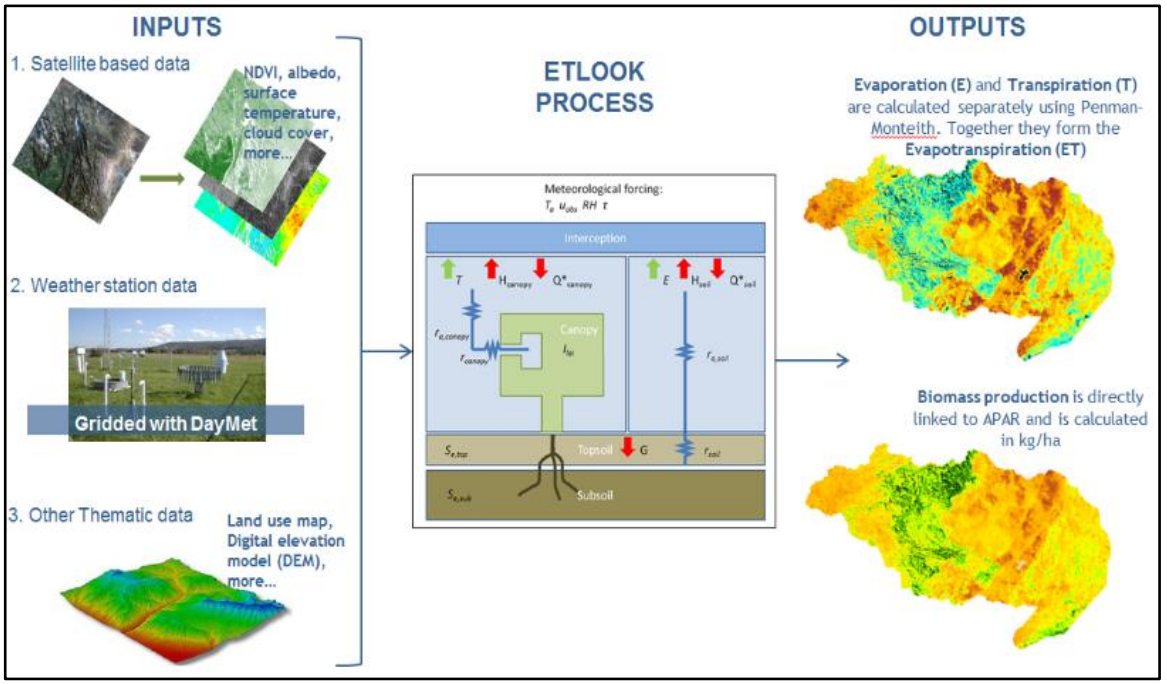
Toolbox – ETLook Energy Balance Modelling

ETLook and PiMapping®



Pelgrum H, Miltenburg IJ, Cheema MJM, Klaasse A & Bastiaanssen WGM 2011. ETLook: A novel continental evapotranspiration algorithm. Remote Sensing and Hydrology, Jackson Hole, Wyoming, USA.

- Based on satellite imagery and meteo data
- Calculating physical processes (e.g. Energy Balance Modelling – Evolution of original SEBAL algorithm)
- Resulting in quantative data in mm, kg, °C, ...
  - Scalable
  - Calibrated per area, not image
  - Automated processing facility. Many images processed automatically every day

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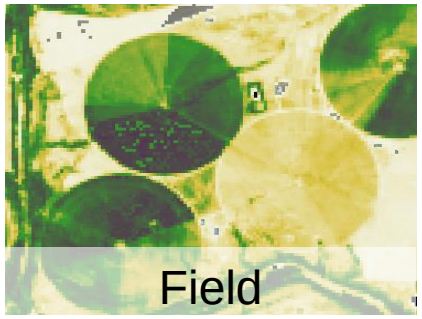
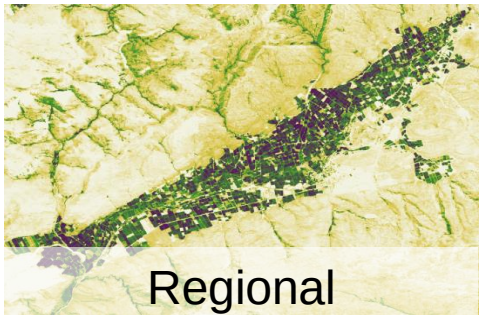
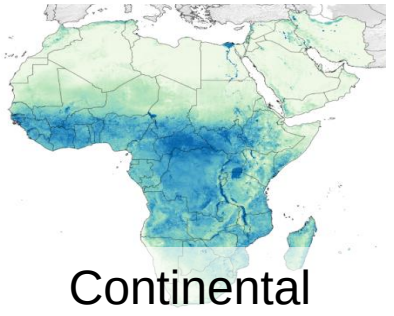
ET Look Data Outputs

Data Components
WATER Actual Evapotranspiration (E, T, I), precipitation, topsoil moisture, water stress, water productivity, water accounting, irrigation performance
VEGETATION Actual biomass production, sowing date, harvest date, land cover, fPAR, crop coefficient, crop yield, Leaf Area Index LAI, Normalized Difference Vegetation Index, Fraction Vegetation Cover
CLIMATE Air temperature, air humidity, wind speed, cloud cover, solar radiation, surface temperature, sensible heat flux (H), latent heat flux (LE)







Quantified For every level of detail

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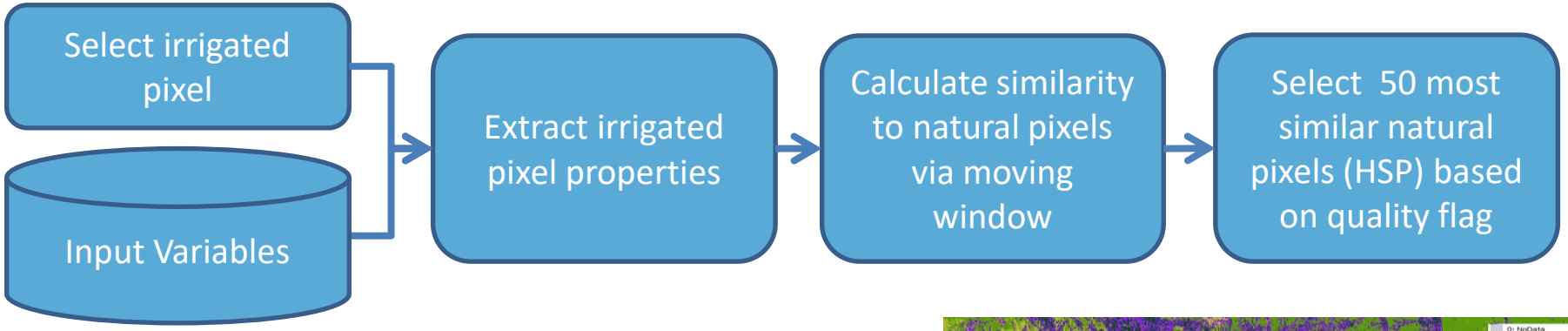
Toolbox – Hydrologically Similar Pixels

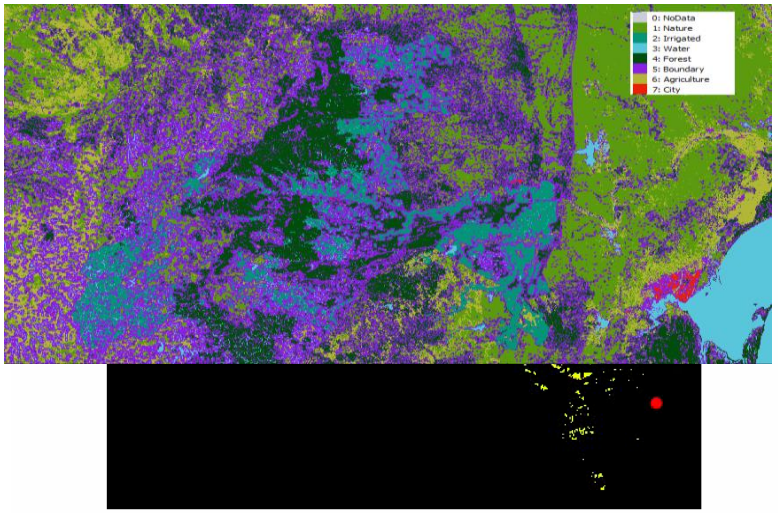


Input variables (pending on data availability)

Static (sub-dived in classes)
- Slope Gradient
- Slope Aspect
- Topographical Wetness Index
- Soil texture

Periodical (operational similarity score)
- Reference ET
- Precipitation

land use map is used to exclude certain natural clas
- Water, Wetlands, Riparian Vegetation, Forest



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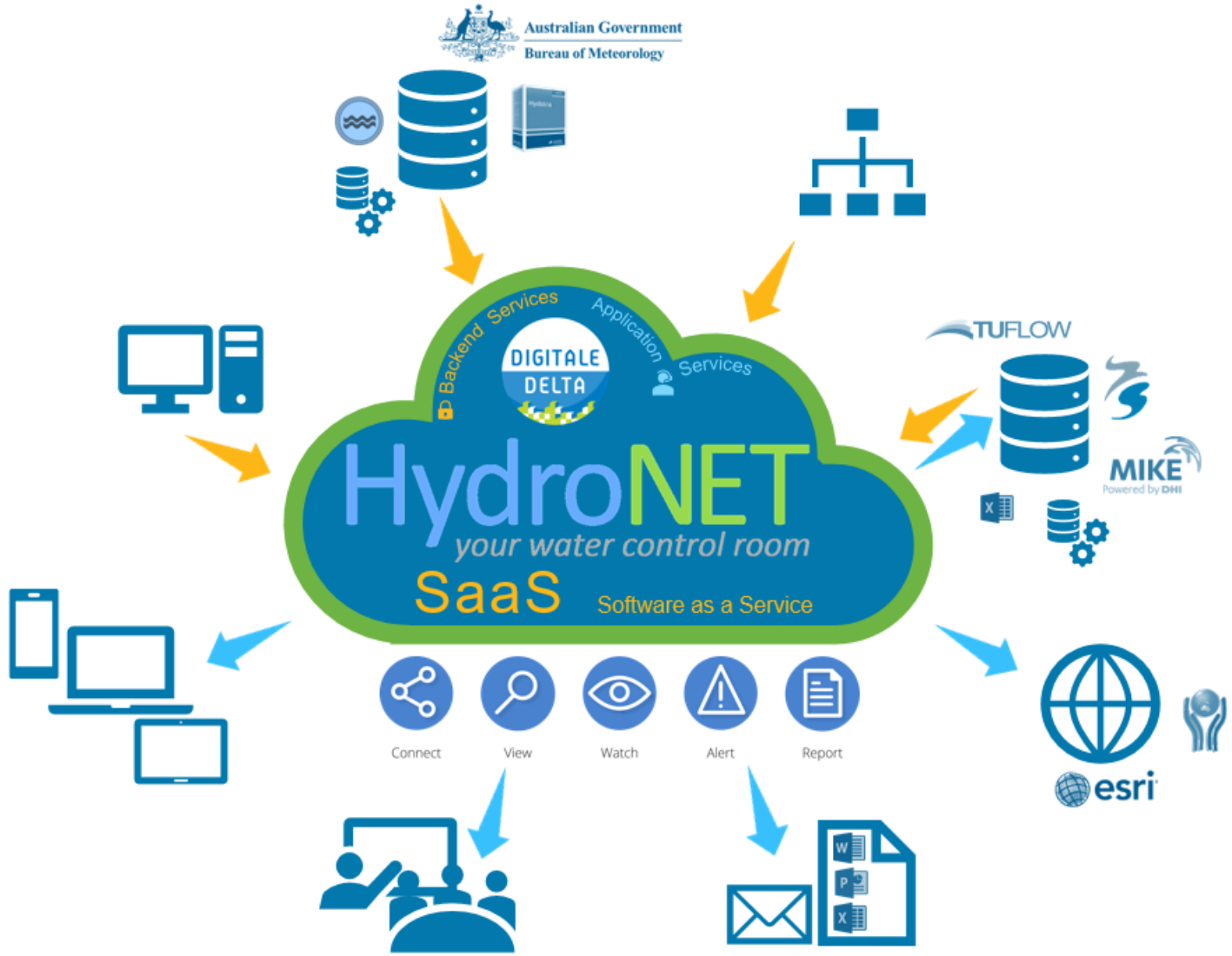
Easy access via Api or App with HydroNET



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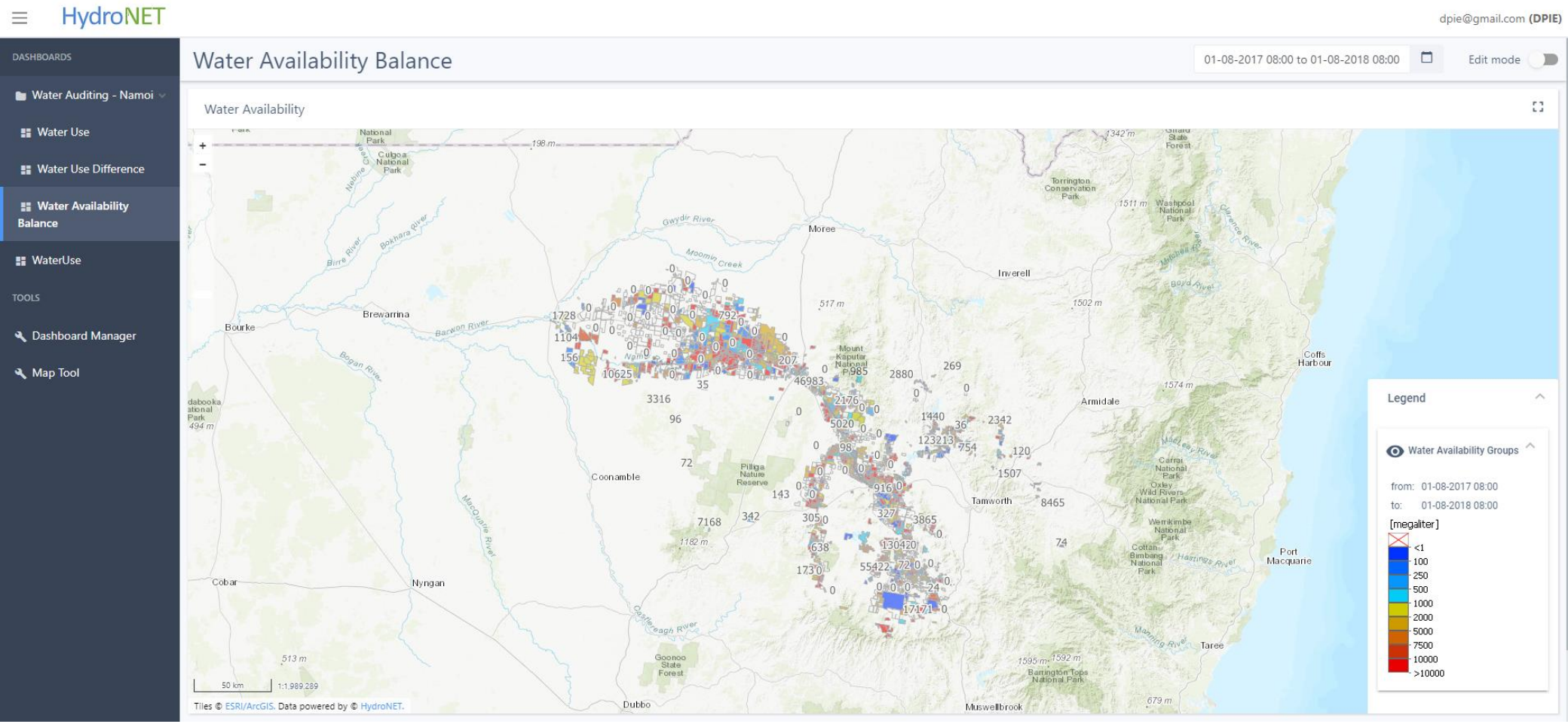
WaterSENSE

Making SENSE of the water value chain in Australia

Water Auditing App



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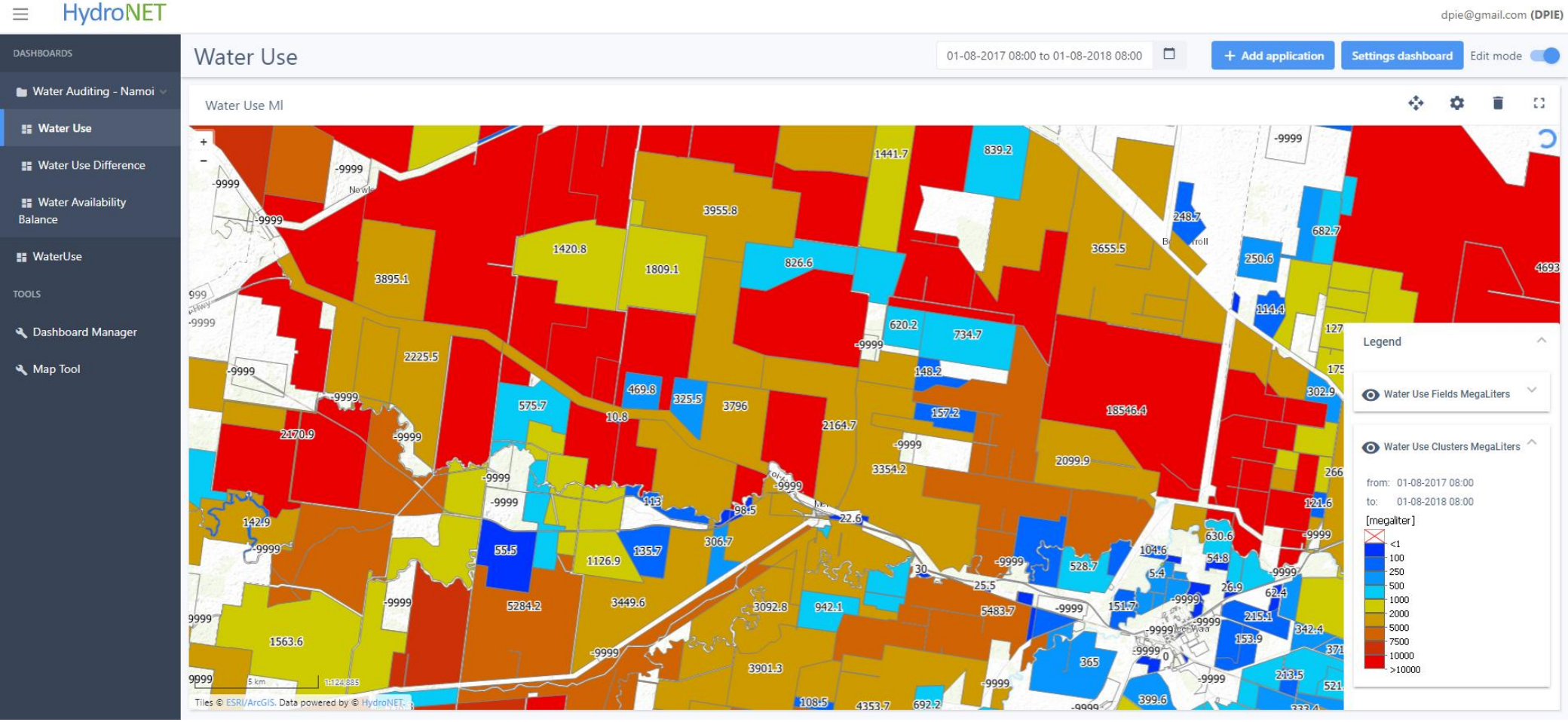

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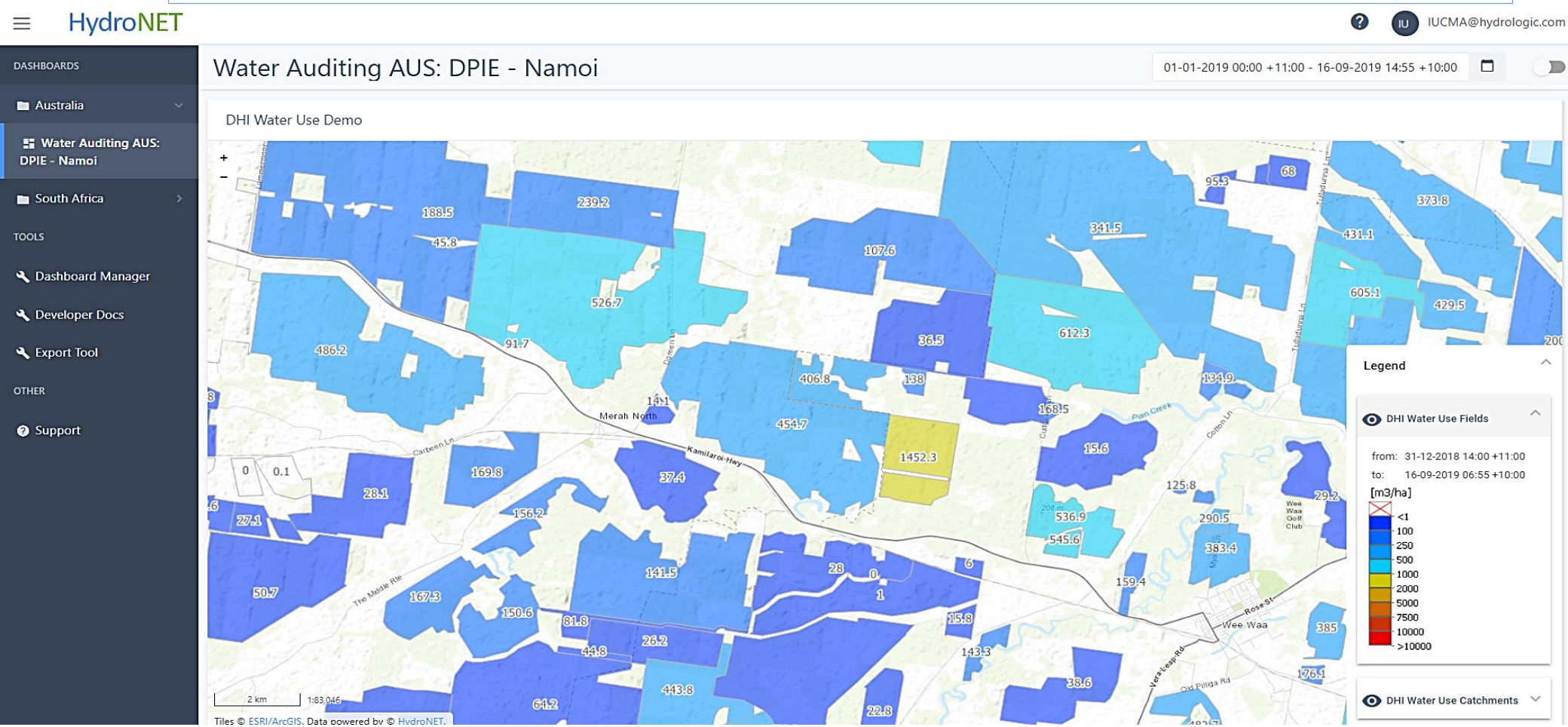

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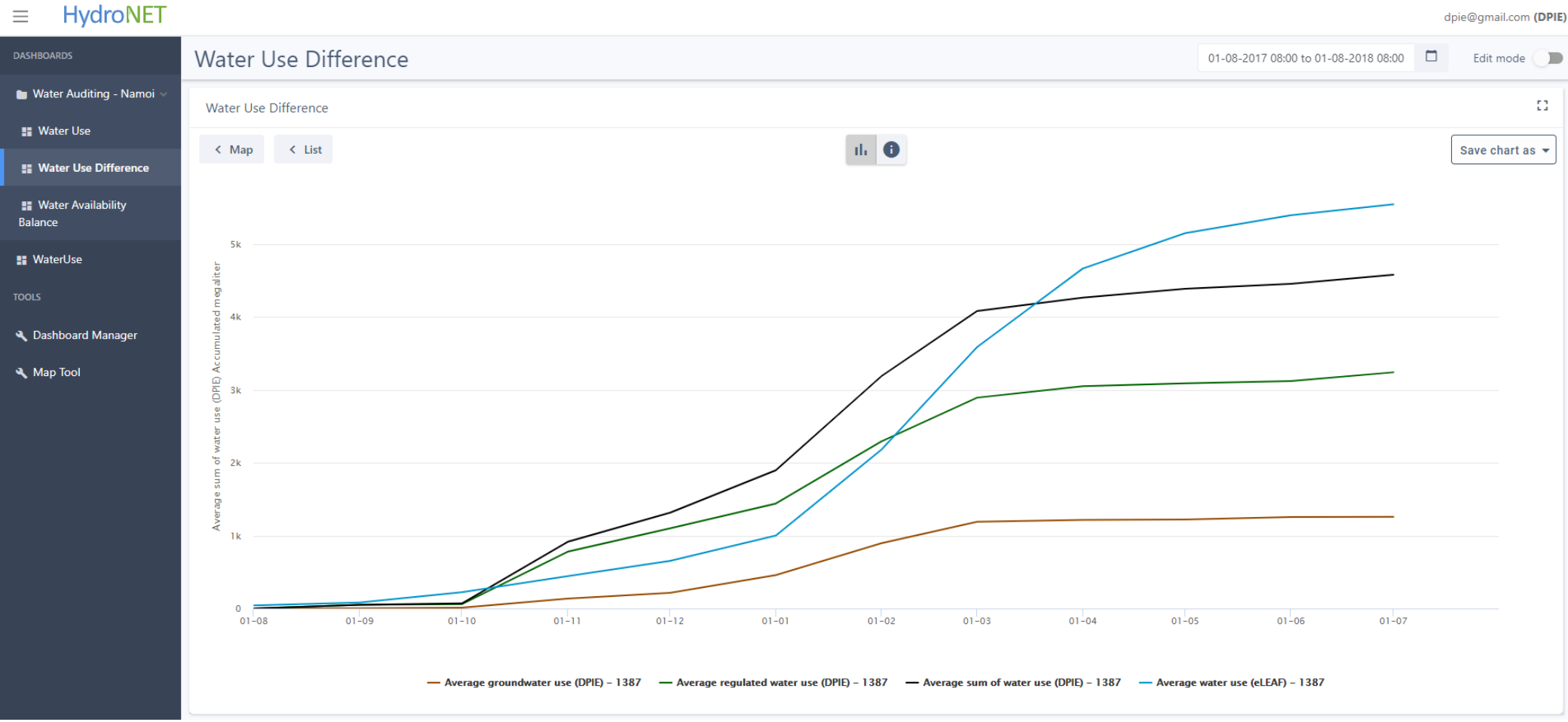

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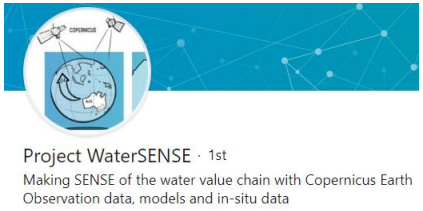

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