ROYAL DANISH CONSULATE GENERAL
The Trade Council in Istanbul

MARMARA BELEDİYELER BİRLİĞİ

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Operational DSS – water planning and drought actions

New developments and experiences

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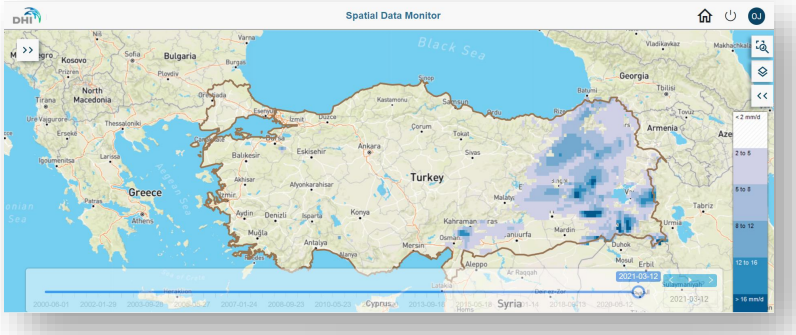
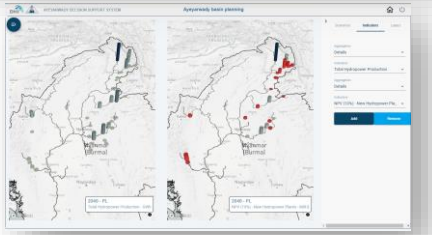
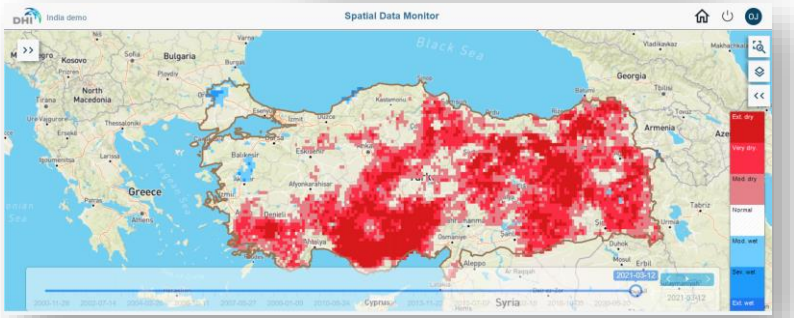
DHI

Agenda

- DHI in short
- What is a Decision Support System (DSS)
- DSS Planning tool – web based DSS portal
- Drought management – operational tools







DHI in short

We're an independent, private and not-for-profit organisation

80% of our 1,050 employees hold an MSc or a PhD degree

Our knowledge represents over 50 years of dedicated research

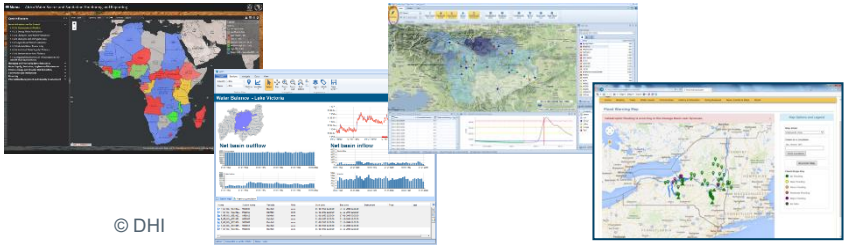
20% of our resources are allocated to R&D

Network of offices in more than 30 countries

DHI - Global experience and local knowledge

Global experience

- River Basin Planning, Operational DSS for Flood & Flow Forecasting, Water Resources Information System…
- Combination of IT and domain expertise assisting decision makers with multi-level decision support
- Generic DSS IT framework with streamlined workflow processes and increased use of web-/ cloud-based solutions



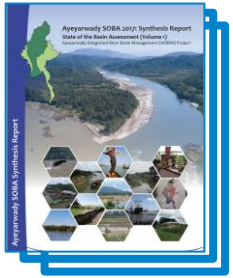
World Bank, UNEP and ADB projects within the last 10 years

What is a Decision Support System (DSS)?

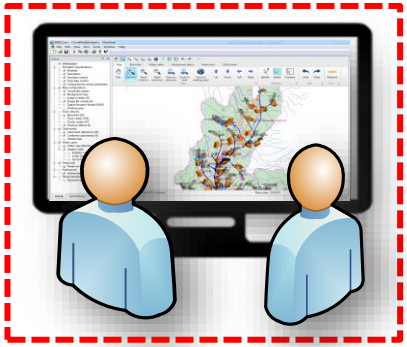
Basin models & DSS tools

Data and information

Litterature & reports



DSS



Views and knowledge

Providing guidance

Sharing information

Decision makers & stakeholders

Stakeholder agreed basin development strategy

DSS in integrated river basin planning


More food production


More hydropower


Better navigation

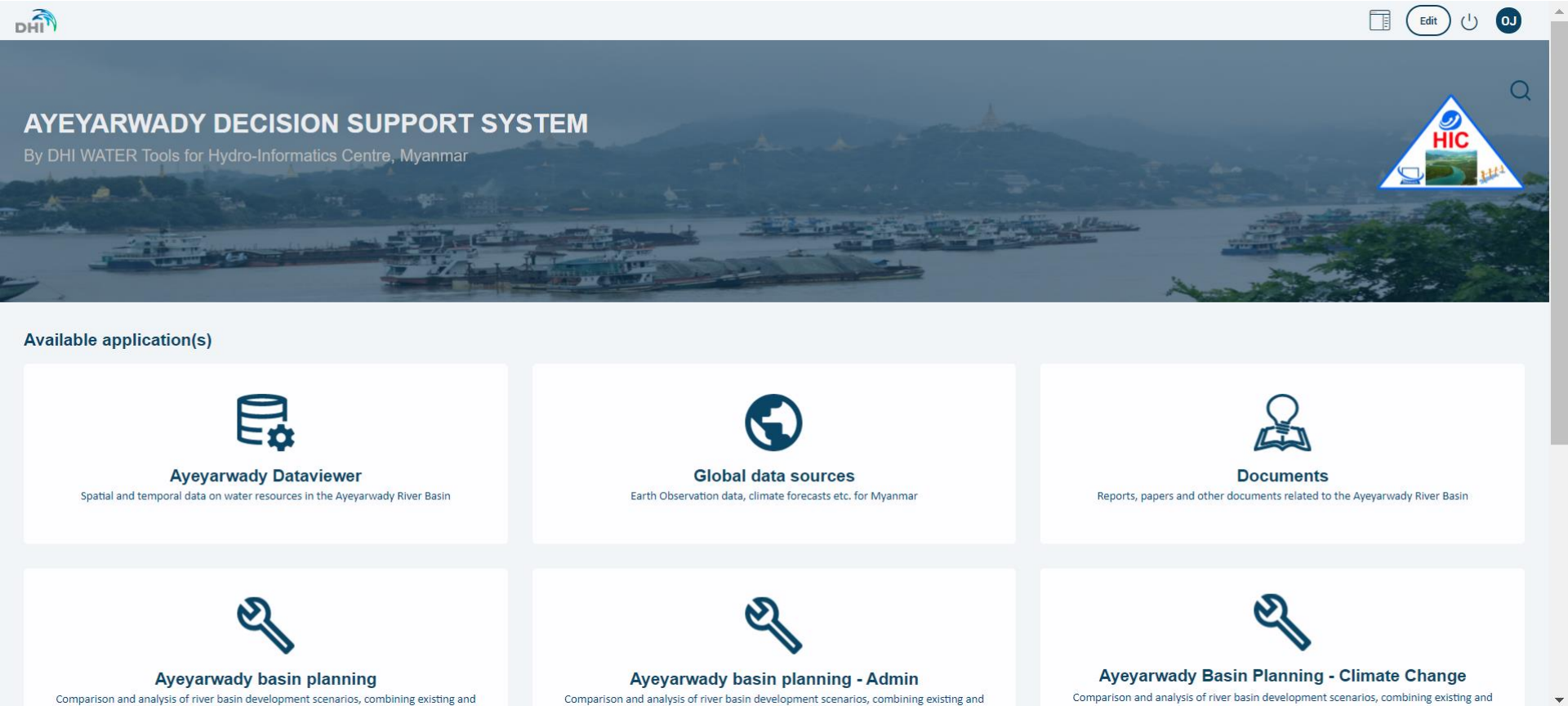

Good environment


Reduced flood risk

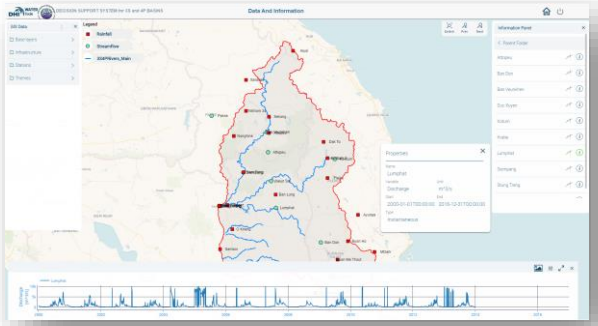

Economic growth

- Investigate impacts of cross-sectoral development
- Help assess economic, social, and environmental consequences
- Take into account climate change, population growth, economic development, technological innovations etc.
- Facilitate information sharing and participation

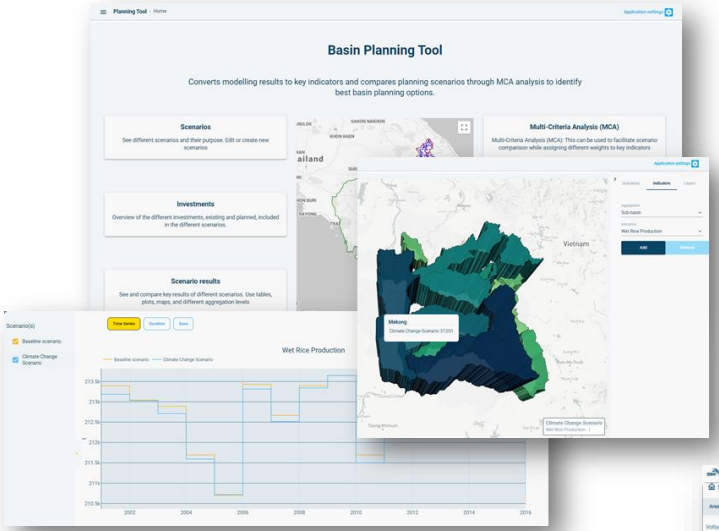
DSS Planning tool – web based DSS portal



Information management

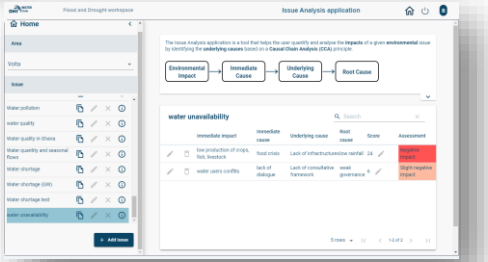


Water resources planning

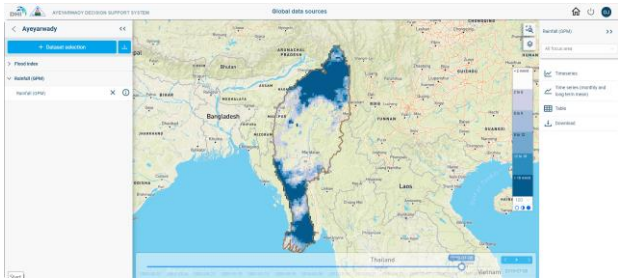


Indicators

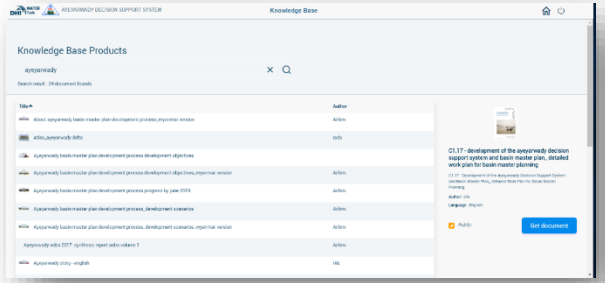
Issues



Global data access



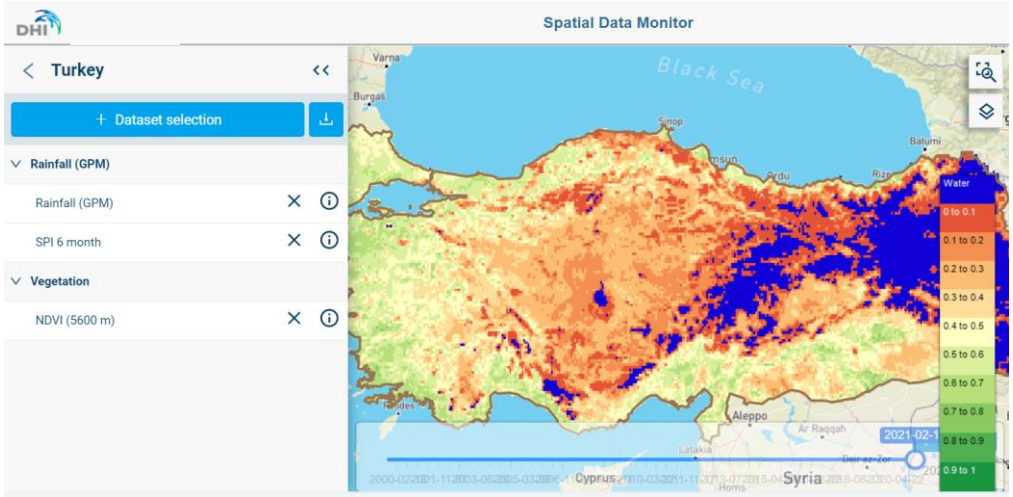
Knowledge base



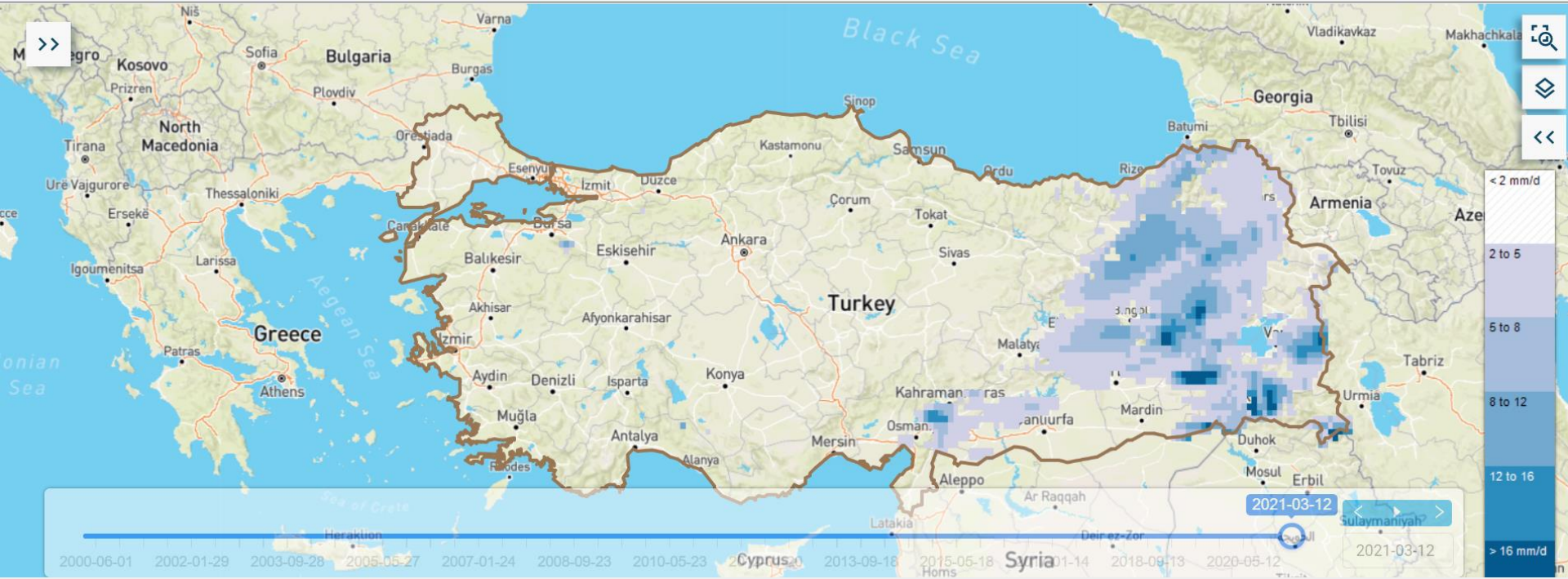
Data available in near-real time for Turkey

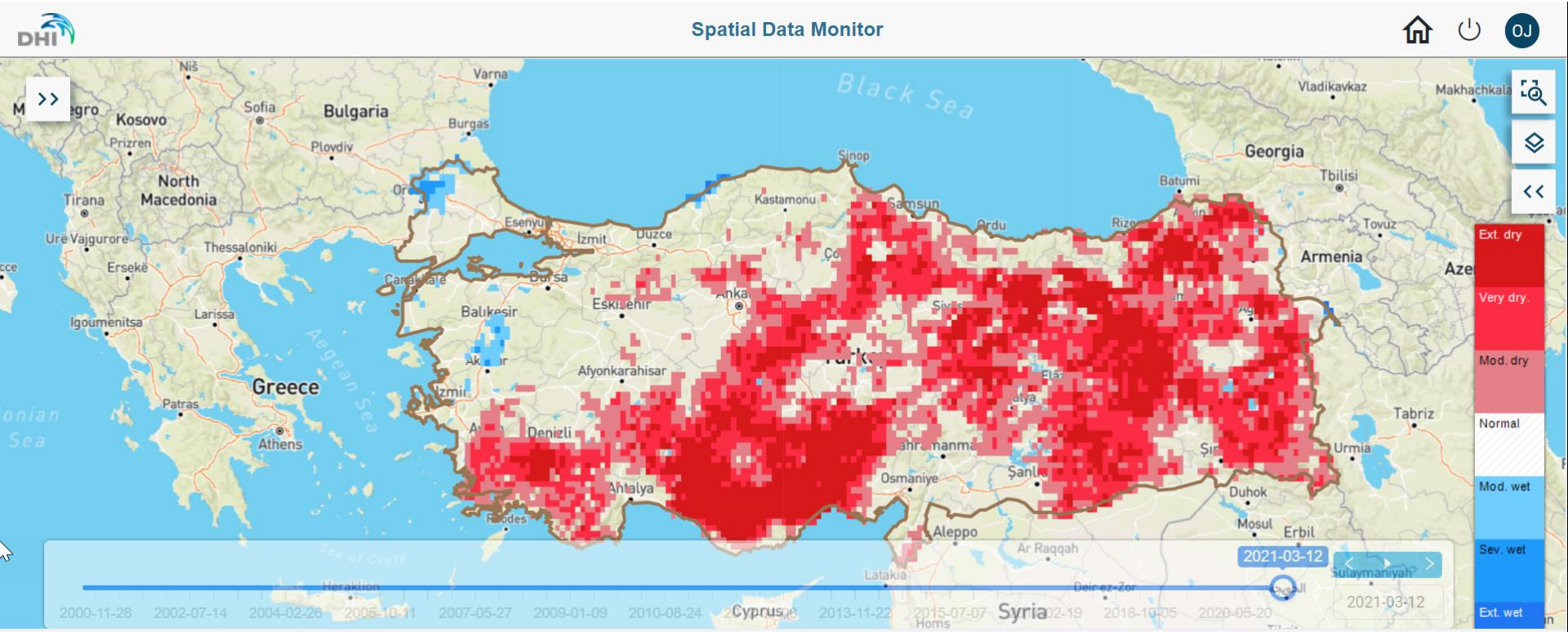
Visualisation and dissemination of hyrological, climate and socio-economic datasets

- Access to **near real-time datasets** (rainfall, temperature, soil moisture, vegetation and forecast data)
- **Visualisation** on maps and as time series and tables for **analysis**
- **Download** functionality

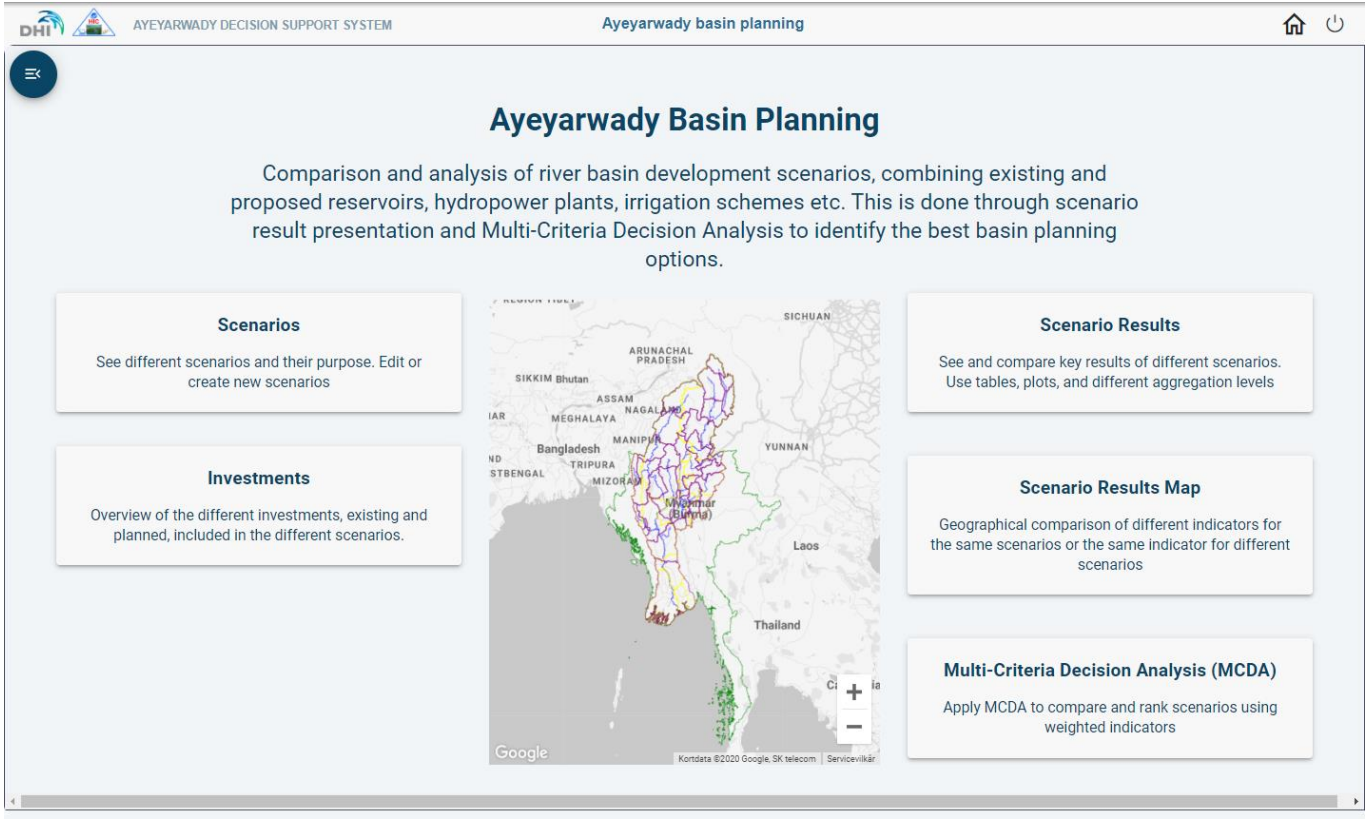


Spatial Data Monitor



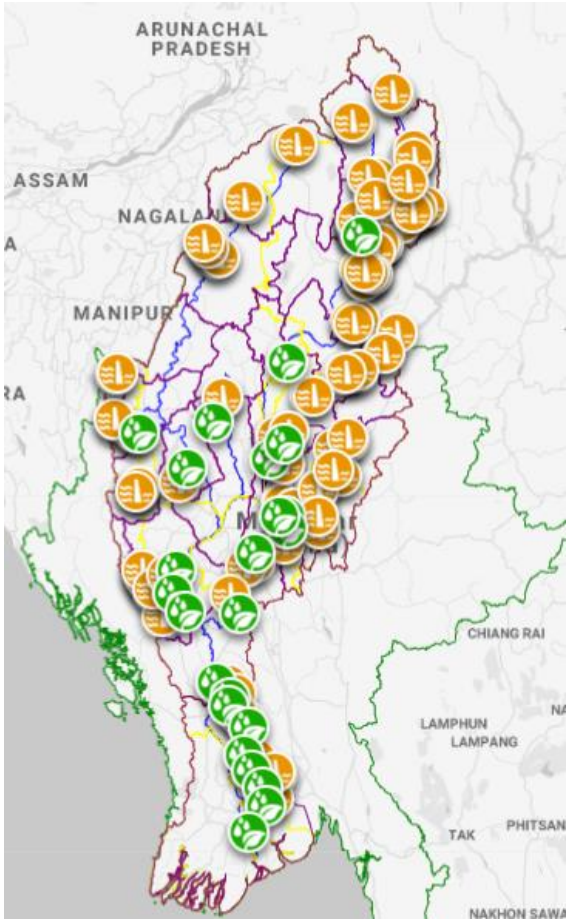

Spatial Data Monitor
OJ
Black Sea
Aegean Sea
Greece
Bulgaria
Kosovo
North Macedonia
Georgia
Armenia
Cyprus
Syria
Ext. dry
Very dry.
Mod. dry
Normal
Mod. wet
Sev. wet
Ext. wet
2021-03-12
2021-03-12
2000-11-28
2002-07-14
2004-02-26
2005-10-11
2007-05-27
2009-01-09
2010-08-24
2013-11-22
2015-07-07
2018-10-05
2020-05-20

DSS for basin management



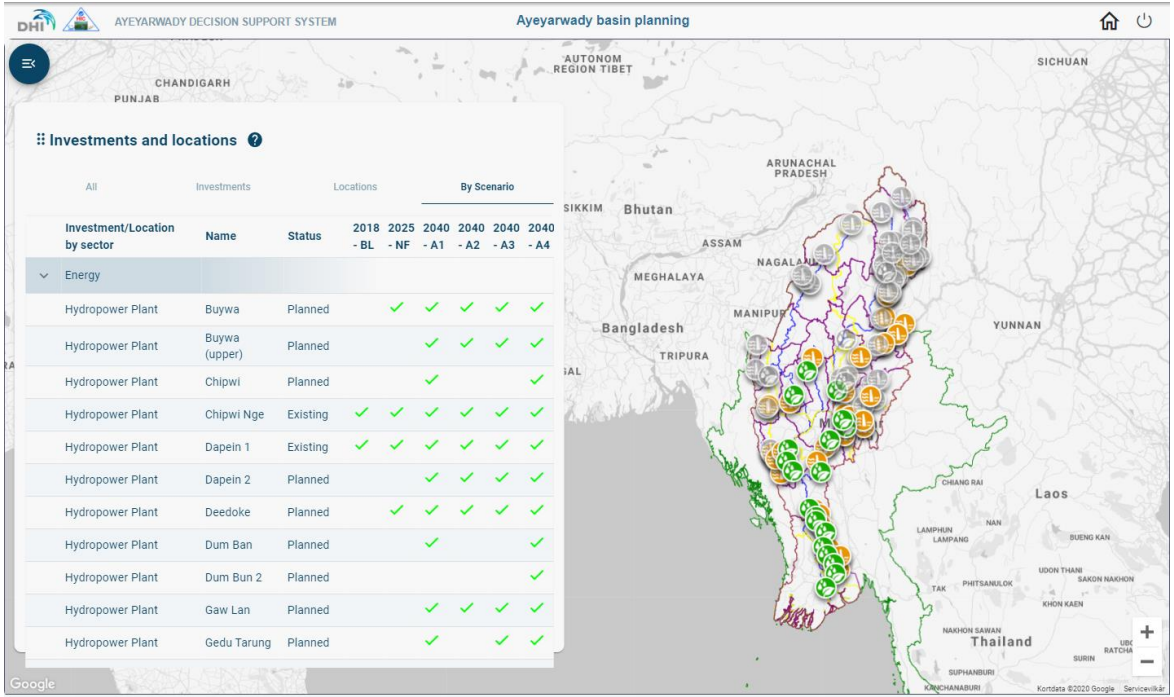
DSS for basin management

- **Overview of all investments** included in one or more scenarios
- **Tables of key and non-key indicators** in scenarios for each investment, sub-area, or the whole river basin
- **Result maps** showing the geographical distribution of **benefits and impacts**
- **Multi-criteria decision analysis** enabling further scenario comparison and weighting of indicators

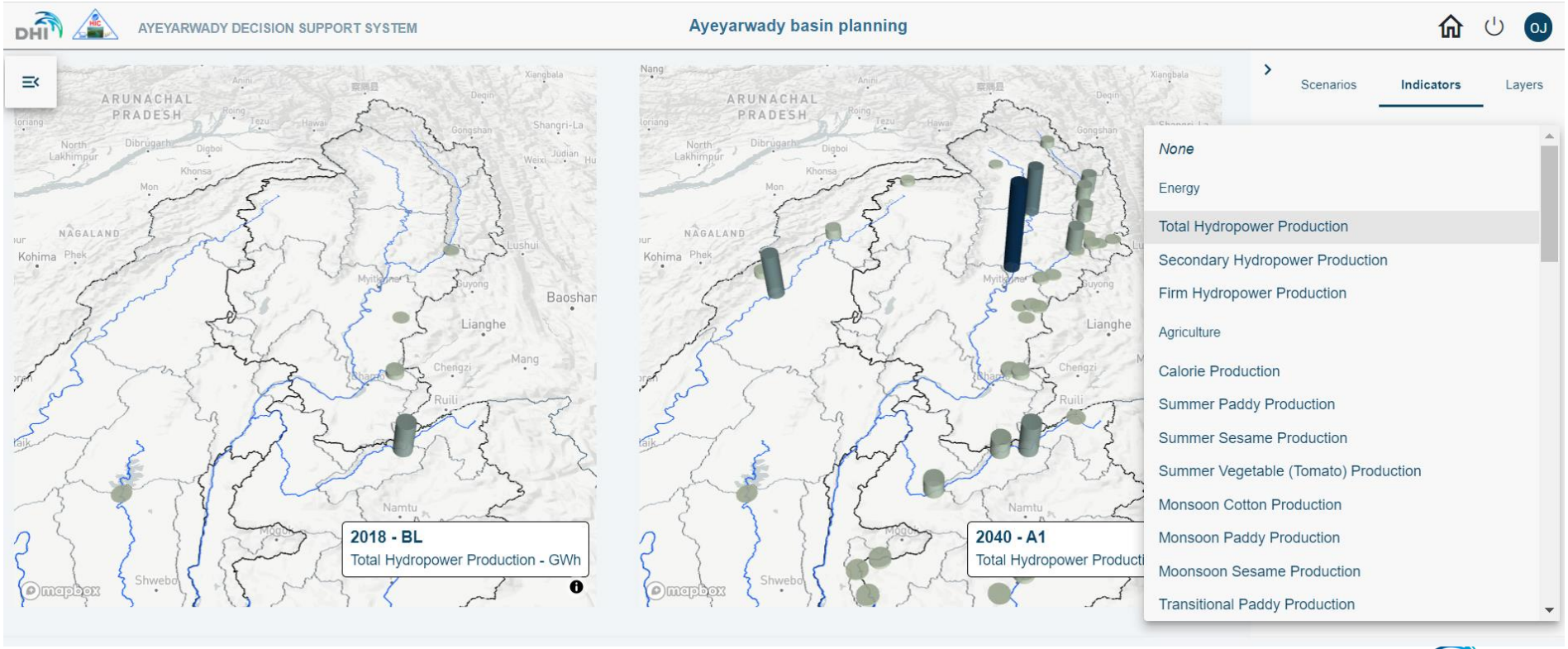


DSS for basin management

- Overview of power plants, irrigation schemes and other investments in the scenarios
- Hoover over a scenario to grey-out investments not included in this

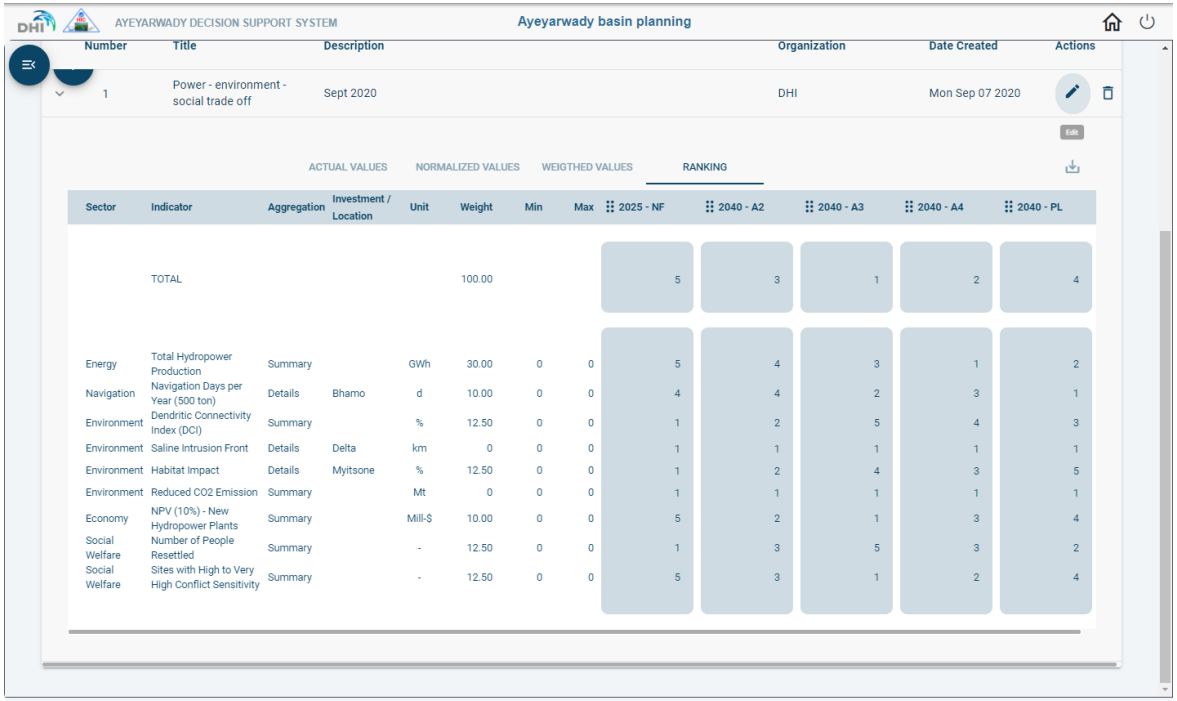


DSS for basin management



DSS for basin management

- Compare scenario indicators in bar-charts or trade-off plots
- Assign weights to indicators to determine ranking of scenarios



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Basin models & DSS tools

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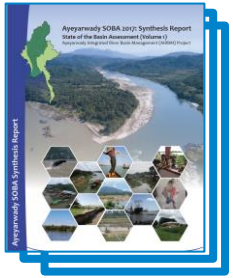
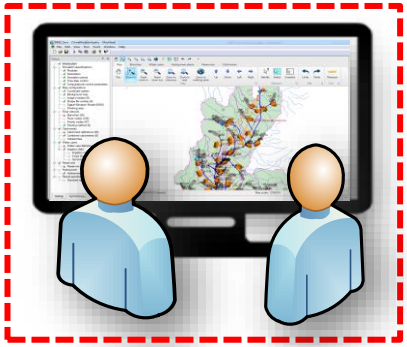
Litterature & reports



DSS



Views and knowledge

Providing guidance

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Decision makers & stakeholders

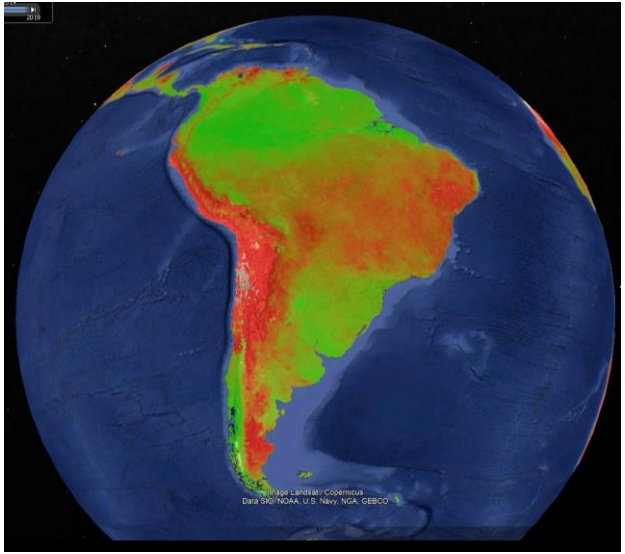
Stakeholder agreed basin development strategy

Drought management – operational tools

Drought **monitoring**

Drought **early warning**

Drought **planning**



Tools cover drought issues on spatial scale from local to global

Drought Index based on DHI's Global Hydrological Model

is based on the water availability in the root zone

Drought very likely
water content at wilting point

No drought
water content at saturation

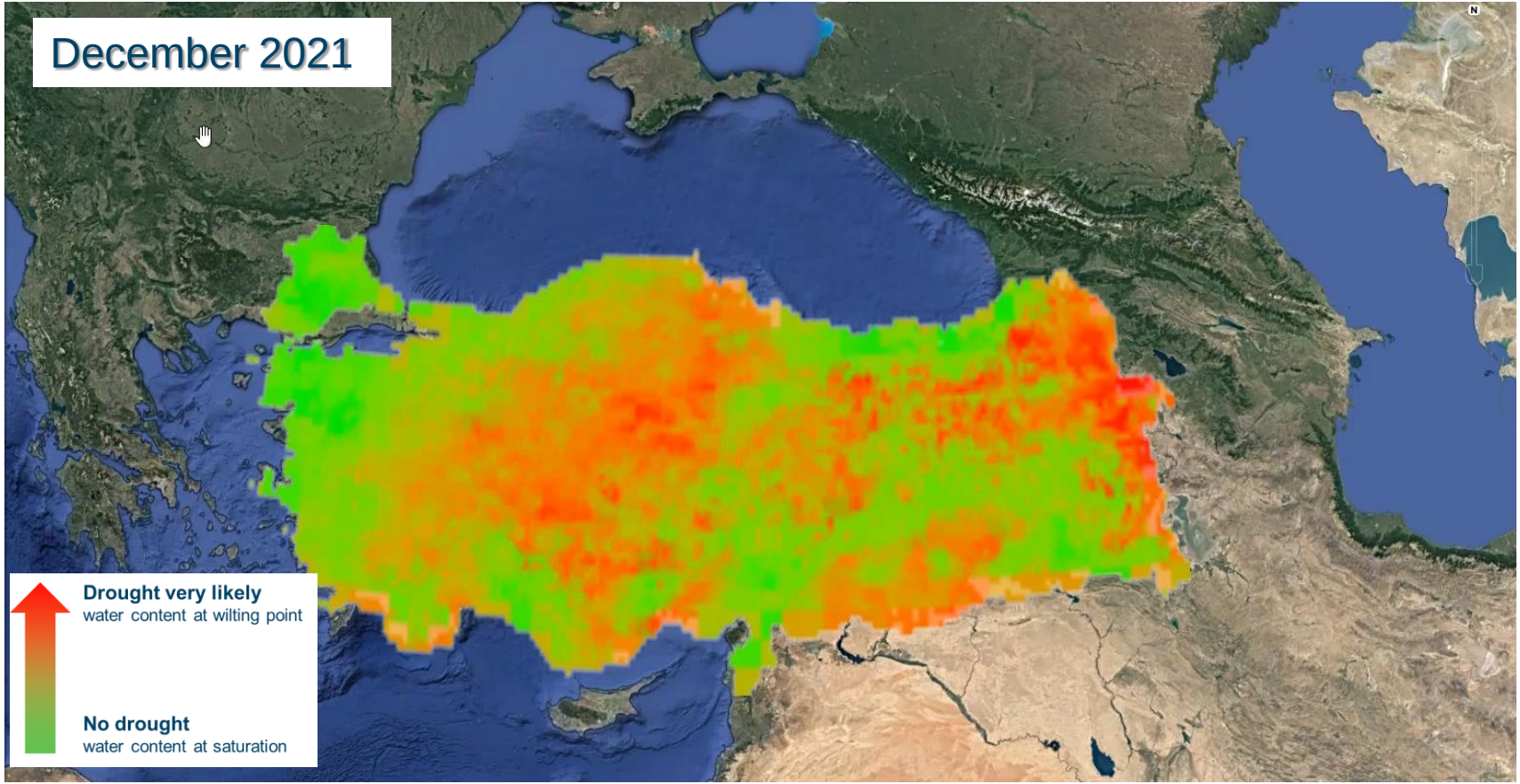
The drought index simulates the **actual** and **future** state of the drought conditions

Example of simulated drought index

where values can be computed in **hindcast** and in **forecast** period

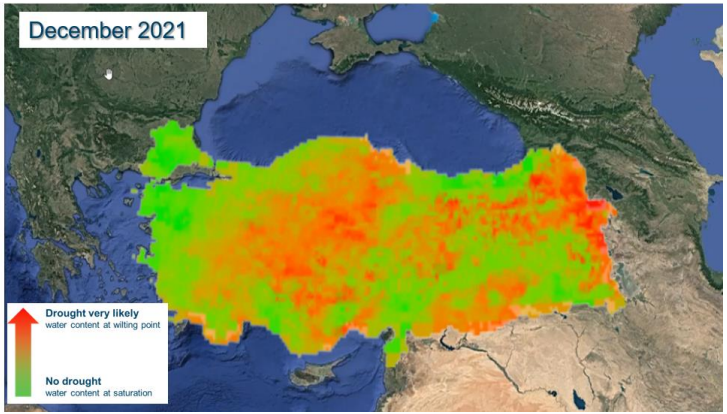
See an example in the following video…

December 2021



Drought management – operational tools

- Online **Drought Monitoring** system with near real-time update
- Drought **Early Warning** with automated warnings based on seasonal forecast
- Linkage to hydrological models for **impact estimations**
- Publishing on dedicated **web portals** or embedding the solution into existing website



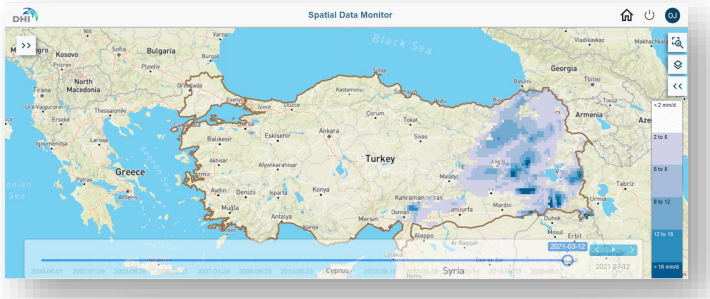
and for almost **any area on the globe**

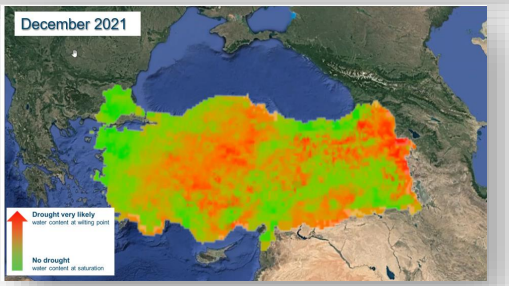
Summary

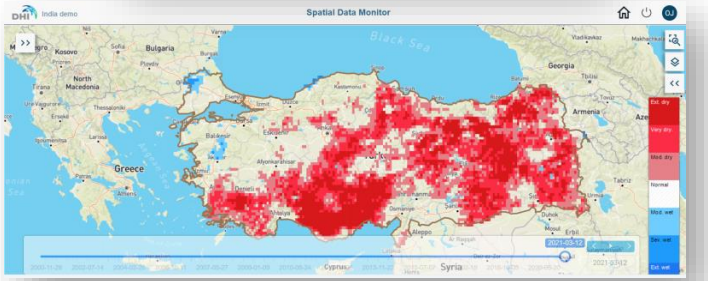
- Integrated basin management looks at impacts across sectors allowing for many different information sources and tools to be used
- Web based applications allows for dissemination to stakeholders across sectors

- Mature and well proven tools are essential for successful basin management

Please contact us for more information!!







Thank you!

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