28. State network of groundwater monitoring points

FAIRWAY partner: Matjaž Glavan (UL, SI), Case study leader Katarina Kresnik, Andrej Jamšek (KGZ Maribor, SI)

Brief description	
Policymakers and water managers (Ministry, Environmental Agency) accept their decisions based on the state-approved water quality monitoring network. Measured values and their trends over the years serve as one of the base indicators for introducing new measures or success in the past introduced measures. The temporal scale of state monitoring one to twice per year. A monthly, daily or weekly monitoring scale (depends on conditions) is performed by drinking water suppliers (water companies).	
Contaminants covered (e.g. nitrate, pesticides etc.)	N, P, pesticides
Intended end-users (e.g. farmer, water quality manager, policy maker)	Policymakers, water managers
Level of expertise and/or training required	Moderate training and expertise to understand monitoring results. However, to decide on measures to be implemented, high level expertise and deep understanding of the local water system and agricultural practices are required.
Geographical resolution (e.g. field, catchment, national)	Water body/ catchment scale.
Temporal resolution (e.g. daily, annual, long-term).	Annually (State) Monthly, weekly, daily (Water company)
Real-time component (e.g. live weather data, soil moisture data feeds etc.)	Some stations are automatic with daily or hourly data.
Number and type of mitigation measures included	None
Platform (e.g. paper-based tool, phone app, bespoke software).	Paper-based tool.
Frequency of updates	The state monitoring network is stable; however, it has to be confirmed by the Ministry every year, depending on financial resources. Water companies have to follow water quality standards for active wells regularly.
Cost/availability	Free.
Number of users or number of copies distributed/ downloaded/purchased	Not known.
Links to demo material and other relevant information (e.g. user guides).	Open source – Web available. Paper-based tool. http://www.arso.gov.si/en/water/reports%20and%20publications/ http://www.arso.gov.si/vode/podatki/ https://gis.arso.gov.si/portal/apps/webappviewer/index.html?id=a16308bd37344559b1c5d5e515468f49
Additional comments	In lack of other tools capable of modelling agri-environmental measures, this is still the preferred way of making conclusions and new decisions. Monitoring results are most often coupled with Eurostat/OECD results to accept new decisions/introduce measures.

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Input data required to run the DST	Location of monitoring points on certain surface waters or groundwater bodies.
Outputs (including links to water quality and economic or financial aspects)	The concentration of nitrate and phosphorus. The concentration of pesticides. The concentration of heavy metals, volatile compounds, drug residues
Age/provenance of supporting data used to develop the DST	- Professional research and scientific knowledge was used to develop this paper tool. http://www.arso.gov.si/en/water/reports%20and%20publications/ http://www.arso.gov.si/vode/podatki/ https://gis.arso.gov.si/portal/apps/webappviewer/index.html?id=a16308bd37344559b1c5d5e515468f49
Country-specific calibration or data requirements (including restrictions on use)	No.
Details of validation and testing	No special details. Results are validated with repeated sampling.
Date developed/released (or planned release date)	Not available
Author/developer names and affiliations	Slovenian Environmental Agency
Member state(s) where developed	Slovenia
Member State(s) where currently used	Slovenia
Key publication references (including url)	http://www.arso.gov.si/vode/ http://www.arso.gov.si/en/water/ http://www.arso.gov.si/vode/podatki/ https://gis.arso.gov.si/portal/apps/webappviewer/index.html?id=a16308bd37344559b1c5d5e515468f49 http://www.arso.gov.si/vode/poro%c4%8dila%20in%20publikacije/ http://www.arso.gov.si/en/water/reports%20and%20publications/

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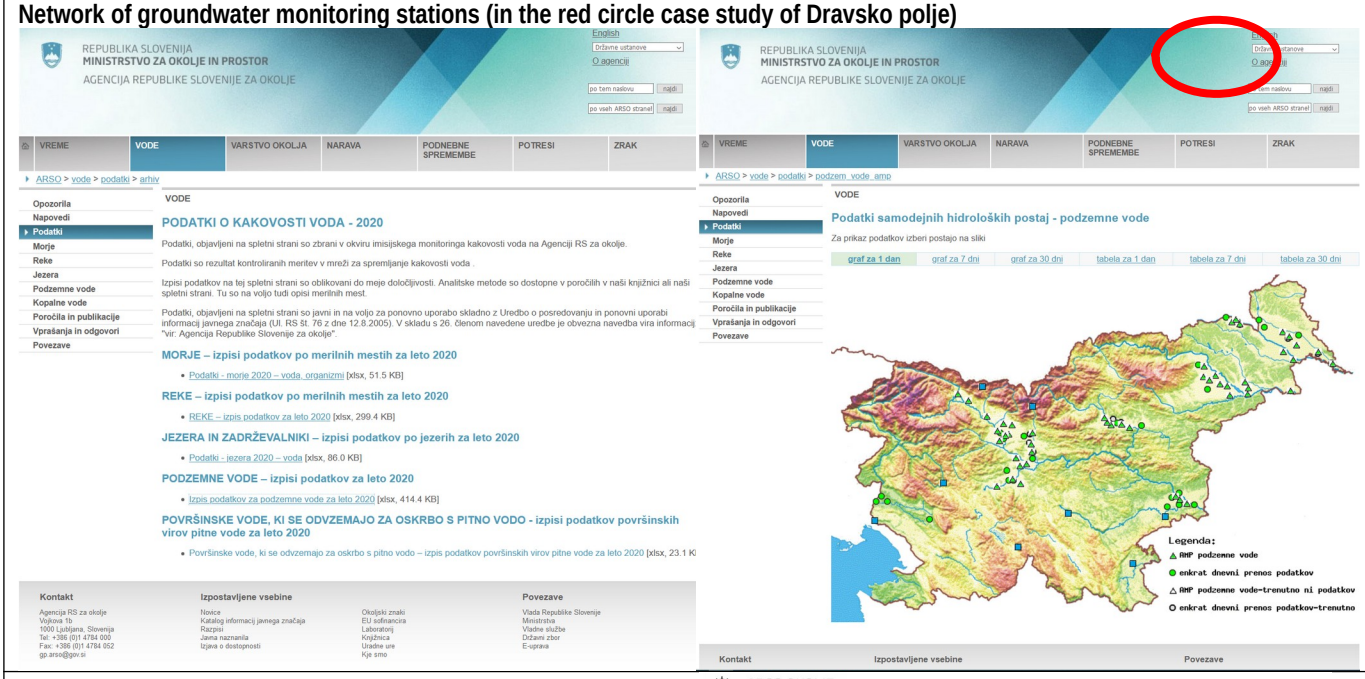
Any other useful information (e.g. screenshots of DST input/outputs

Network of groundwater monitoring stations (in the red circle case study of Dravsko polje)



ARSO OKOLJE

Šifra VTPV	Ime vodnega telesa	Površinska voda	Obdobje	Ocena stanja glede na PO	Raven zaupanja ocene	Razlog za zmerno stanje za PO
SI168VT9	VT Voglajna zadrževalnik Slivniško jezero – Celje	VOGLAJNA	2014-2019	DOBRO	srednja	
SI168BVT1	VT Hudinja povirje – Nova Cerkev	HUDINJA	2014-2019	ZELO DOBRO	srednja	
SI168BVT2	VT Hudinja Nova Cerkev – sotočje z Voglajno	HUDINJA	2014-2019	ZMERNO	visoka	sulfat
SI1696VT	VT Gračnica	GRAČNICA	2014-2019	DOBRO	visoka	
SI18VT31	VT Krka povirje – Soteska	KRKA	2014-2019	ZELO DOBRO	srednja	
SI18VT77	VT Krka Soteska – Otočec	KRKA	2014-2019	ZELO DOBRO	srednja	
SI18VT97	VT Krka Otočec – Brežice	KRKA	2014-2019	ZELO DOBRO	srednja	
SI184VT2	VT Radešica	RADEŠČICA	2014-2019	ZELO DOBRO	srednja	
SI184VT1	VT Črmošnjiščica	ČRMOŠNJIČICA	2014-2019	ZELO DOBRO	srednja	
SI186VT3	VT Temenica I	TEMENICA	2014-2019	ZMERNO	visoka	cink, kobalt
SI186VT5	VT Temenica II	TEMENICA	2014-2019	DOBRO	visoka	
SI188VT5	VT Radulja povirje – Klevevž	RADULJA	2014-2019	ZELO DOBRO	visoka	
SI188VT7	VT Radulja Klevevž – Dobrava pri Škocjanu	RADULJA	2014-2019	DOBRO	visoka	
SI186VT7	VT Prečna	PREČNA	2014-2019	DOBRO	visoka	
SI6VT119	VT Soča povirje – Bovec	SOČA	2014-2019	ZELO DOBRO	srednja	
SI6VT157	VT Soča Bovec – Tolmin	SOČA	2014-2019	ZELO DOBRO	srednja	
SI6VT330	MPVT Soča Solkse elektrarne	SOČA	2014-2019	ZELO DOBRO	srednja	
SI62VT13	VT idrijca povirje – Podroteja	IDRIJCA	2014-2019	ZELO DOBRO	srednja	
SI62VT70	VT idrijca Podroteja – sotočje z Bačo	IDRIJCA	2014-2019	ZELO DOBRO	srednja	
SI626VT	VT Trebuščica	TREBUŠČICA	2014-2019	DOBRO	visoka	
SI628VT	VT Bača	BAČA	2014-2019	ZELO DOBRO	srednja	
SI63354VT	VT Koren	KOREN	2014-2019	DOBRO	visoka	
SI64VT57	VT Vipava povirje – Brje	VIPAVA	2014-2019	ZELO DOBRO	srednja	
SI64VT90	VT Vipava Brje – Miren	VIPAVA	2014-2019	ZELO DOBRO	srednja	
SI644VT	VT Hubelj	HUBELJ	2014-2019	DOBRO	visoka	