

Introducing GWSDAT (GroundWater Spatiotemporal Data Analysis Tool)

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GWSDAT v2.0

- GWSDAT is a user-friendly Microsoft Excel Add-In that can be used to visualise and interpret groundwater monitoring data.
- Key features include:
 - Spatiotemporal modelling capability: uses statistical methods to continuously model variation in groundwater solute concentration as a function of X,Y and time
 - Automatic generation of concentration contour plots at user specified time intervals, with the option to overlay groundwater elevation contours and NAPL thickness/ footprint data

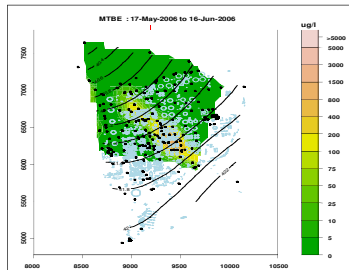
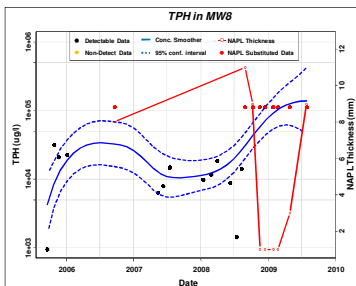
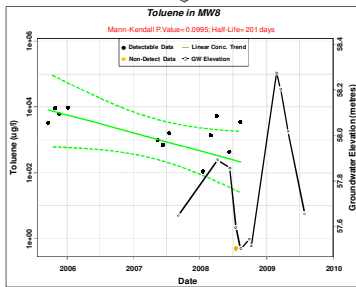
Business Benefits

- Improved data transparency helps design and optimise groundwater monitoring or remediation programmes (i.e. avoid the collection of redundant data)
- Early identification of new releases, migration pathways, need for corrective action and stable/ declining trends that may aid in closure determinations
- Rapid interpretation of complex data sets from large monitoring networks (e.g. refineries, terminals)

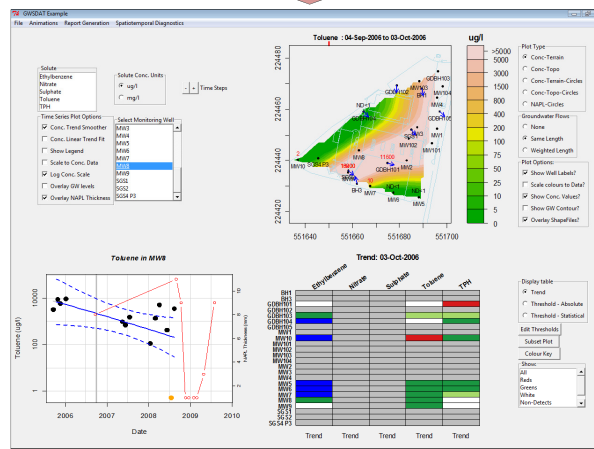
"Get the most out of monitoring data... with the click of a mouse"

Time series plots of groundwater elevation, NAPL thickness and solute concentration

- Generated automatically for any well/analyte combination
- Automatic fitting of linear or non-parametric trend overlay functions, with 95% confidence limits
- Graphics can be exported directly to Powerpoint or to other applications for reporting purposes.



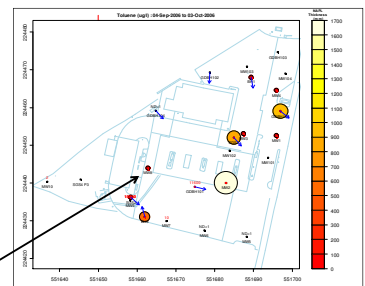
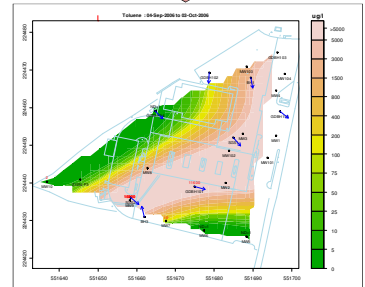
Historical Monitoring Data				Well Coordinates				GIS ShapeFiles	
WellName	Constituent	SampleDate	Result	Units	Flag	WellName	XCoord	YCoord	Aquifer
SS25 P1	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P2	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P3	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P4	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P5	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P6	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P7	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P8	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
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SS25 P49	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A
SS25 P50	Napthalene	05/11/2009	43.1	mg/L		0110	55169.33	24445.03	A



Well boring locations colour-coded red to indicate current/ historical presence of NAPL (i.e. footprint), to aid remedial decision making

Contour plots of groundwater elevation and solute concentration

- Concentration contours are generated from a spatiotemporal smoother algorithm
- Groundwater elevation contours are fitted by kriging
- NAPL thickness and extent is indicated by coloured, sized circles (bubble plot)
- Site plan can be imported as background image



Capable of handling large datasets for complex sites

- Example shows MTBE plume at manufacturing site
- 40,000 lines of input data in dataset processed in only 30 minutes.
- Processed data file and panel settings can be saved, thereby avoiding the need to reprocess the data.
- Monitoring wells can be attributed to different aquifers, so that multiple models can be created from the same input data.

Time series plots of measured vs modelled solute concentrations

- Generated automatically for any well/analyte combination
- Provides rapid visual check on quality of spatiotemporal model fit to actual concentration data
- Graphics can be exported directly to MS Powerpoint or to other applications for reporting purposes.
- Actual vs modelled concentration data can also be exported to Excel for further statistical analysis

