Add Geostatistics
to your Site Investigation & Remediation Process

Valuate your data

- **Investigate and clean your data** with Isatis unique Exploratory Data Analysis interactive module.
- **Identify and handle data anomalies** and anisotropies using appropriate statistical representations (basemap, histogram, q-q plot, variogram map).
- **Identify homogeneous areas**.

Optimize your investigation data

- **Optimize your sampling strategies**.
- Fully **integrate all qualitative** and **quantitative available data** (historical information, geophysics, chemical kits) so that no information is either unused or lost.

Get a reliable mapping of the pollution

- **Characterize the spatial behavior** of your pollutant concentrations through variogram analysis.
- **Take the sampling representativity** into account.
- **Compute accurate maps** using appropriate kriging algorithms and variogram models.

- **Assess the precision of your map** with the kriging variance.
- **Refine your pollutant map** using correlated pollutants data and indirect information.
- **Take advantage of different series of measurement** of a same pollutant.

Quantify the uncertainties on contaminated volumes

- **Compute the probability of exceeding a pollution threshold** over a given remediation block using non linear techniques.
- **Have a reliable estimate** of contaminated volumes to be cleaned up from probabilistic models.
- Obtain results which are **consistent** with the **remediation technology** and **objectives**.
- **Get the probability distribution** of contaminated materials and assess the uncertainty on the volumes.
- **Classify the materials** as contaminated or safe according to statistical criteria.
- Avoid overspending by **quantifying the uncertainty on your remediation budget**.
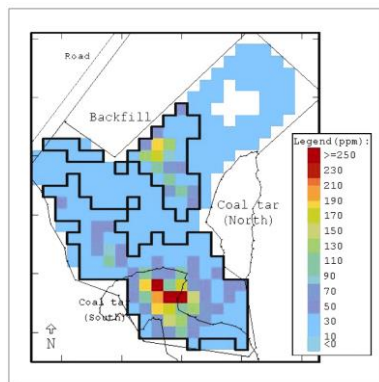
isatis

EXAMPLE OF AN ORGANIC POLLUTION

The added-value of geostatistics is illustrated in this example of a soil pollution by Benzo(a)pyren (B(a)P), a Polycyclic Aromatic Hydrocarbons (PAH), on a former coke plant.
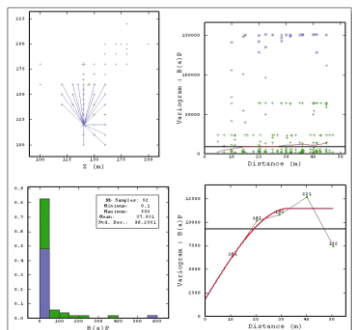

In-depth data analysis allows to identify erroneous data and check data consistency.
The variogram (bottom right) characterizes the spatial correlation of B(a)P data. The pollution presents a spatial correlation up to 30 km.

By fixing the risk we accept to leave contaminated blocks in place, we determine the quantities and the location of materials to be cleaned up. The map displays the mean B(a)P grades above 10mg/kg on 5x5m blocks. It also outlines the area where the probability that B(a)P grades exceeds 10mg/kg is positive.

The 3D technology of Isatis allows to fully check the contaminated volumes.
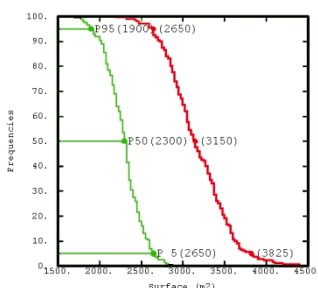
The cumulate histograms of the volumes where the pollutant concentration exceeds 10 mg/kg show that the use of auxiliary information correlated to the B(a)P grade leads to a 15 % decrease of the polluted volumes (green line: distribution curve with auxiliary information; red line: use of B(a)P data only).
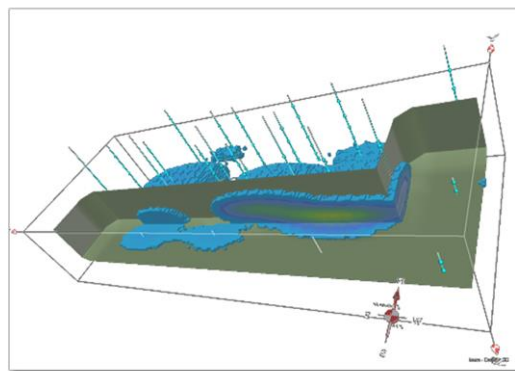
ISATIS OVERVIEW

Geovariances offers geoscientists a unique geostatistics software package issued from 40 years of experience in industrial applications:

- Fully integrated and operational package.
- Wide range of tools for in-depth data analysis, estimation and risk analysis.
- Both interactive and automatic capabilities.
- Comprehensive interactive documentation and user's manuals.
- Interfaced with GIS formats and third party software.
- Interfaced with standard formats (ASCII, Excel, ODBC, etc.)

- Available on PC Intel/AMD Windows 7 or 8 32-bit or 64-bit (recommended) or Linux Red Hat Enterprise 5 (or 6) or equivalent (64-bit). Isatis on Windows OS requires the PC X server Exceed V14+

- 1000+ licenses used by 400+ private oil & gas companies, mining companies, consultancy teams and environmental agencies worldwide.

CONSULTING AND TRAINING

Our highly experienced consultants provide a wide range of top quality services for beginners and specialists in Geostatistics: one-to-one technical support, mentoring, training workshops, consulting.

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