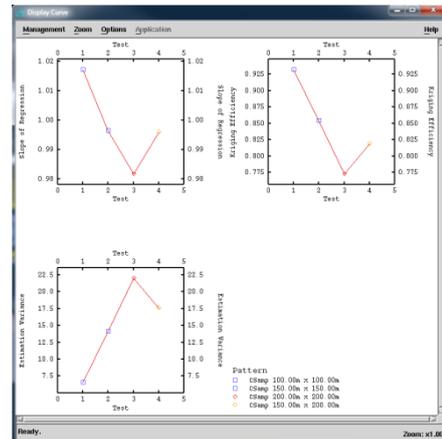# What's new in ISATIS 2017?

The latest Isatis release offers new features for kriging and sampling optimization. Besides, the software package has been enriched with several tools for surface handling. It also provides resource geologists with an innovative and smart way of classifying mineral resources.

Isatis 2017 optimizes kriging

The new **Kriging Neighborhood Analysis (KNA)** helps identify the best kriging neighborhood configuration for quality estimation. Isatis compares different sets of neighborhood parameters according to several criteria including *kriging efficiency*, *slope of regression*, *sum of the positive kriging weights*, *weight of the mean*, *correlation of z/z**.
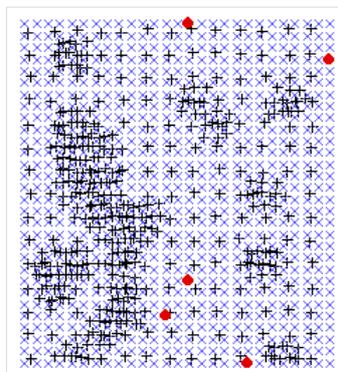
Isatis 2017 optimizes sampling strategy

Two new functionalities have been made available for that purpose:

- **Sampling Optimization** helps identify areas where map quality is poor because of too much uncertainty and proposes **new sampling locations** that would improve local estimation.


New sample locations in red suggested by Isatis

  Two statistics criteria are available: *confidence interval* or *misclassification* (probability of having false negative or false positive).

- **Local Sampling Sensitivity Analysis** helps determine the **optimal sampling mesh to achieve a given resource accuracy**. From a previous variography achieved on a primary dataset, the new tool allows testing different regular sampling patterns. Test criteria are based on kriging quality parameters such as the *estimation variance*, the *kriging efficiency* and the *slope of regression*.

Optimization criteria vary with the mesh size

Isatis 2017 simplifies mineral resource classification

Isatis offers **Sampling Density Variance**, a new tool to characterize a *spatial sampling density* for each SMU which takes into account the variographic structure of the grade of interest. This volume-like variable can be used to compare different sampling patterns in a domain or in different domains. In case of irregular sampling pattern, it can be mapped and used to differentiate areas with different sampling densities.
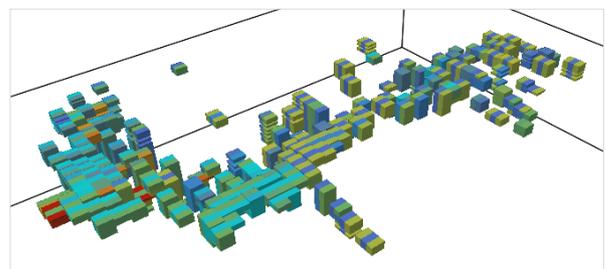
Spatial Sampling Density mapping with Isatis

From that density, a **risk index** related to a given production volume can be computed in Isatis calculator and used for resource classification ([more info](#)).

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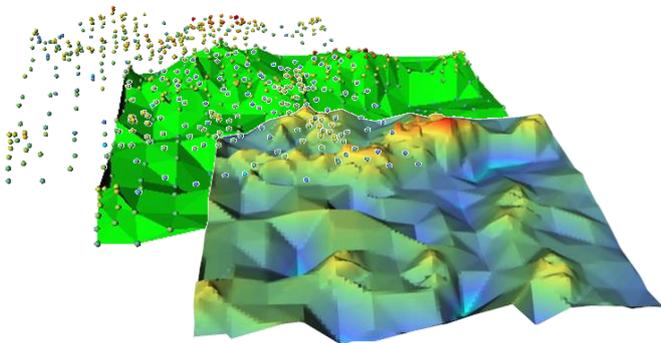**isatis**

Isatis 2017 goes further with surfaces

Several new tools have been made available to deal with surfaces:

- The new **Streamlines Calculator** analyses the runoff of water falling on a topographic surface and build the streamlines in time.

This tool is particularly helpful to **retrieve the source of a soil contamination** or delineate a possible contamination area. This could also help in choosing the best location for building monitoring stations that would measure potential pollution coming from a plant.
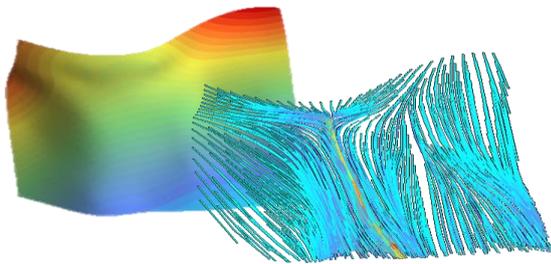
- **Selecting samples inside a geological layer** has been made easier: surfaces can now be used to select data stored on a 3D Points File or Lines Files.

- **Isolines** displayed in a 2D view can now be exported as a **Shapefile** (.shp).

- **Wireframes** can now be computed from a set of 2D points with elevation information, and then **interpolated in an elevation variable** on 2D Grid File.


This feature is particularly useful to quickly get surfaces from a dense set of points.

- **Wireframes** can also be exported as AutoCAD DXF files while the Polygon Editor now allows **polygon geometries to be exported as Shapefiles.**

Isatis 2017 improves facies modeling

- **Flumy, Isatis model for meandering channelized environments**, has been enriched with new options in the context of turbidites:
  - **Aggradation** comes with two new options: **Erosive** or **Overbank Flow**;
  - **Pelagic sedimentation process** has been made available;
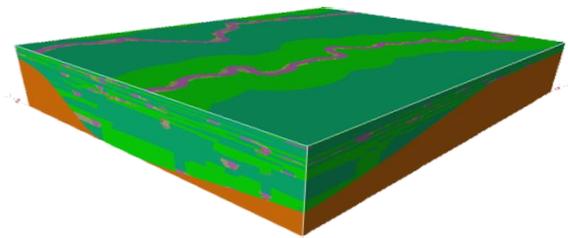
  - **Default parameters** have been reviewed for more realistic models.

- **Multiple-point Simulation now handles non stationarity and anisotropies**. The application lets you define two auxiliary variables as well as two additional variables, **local azimuth and local scaling**, allowing local tuning of models starting from the same training image.
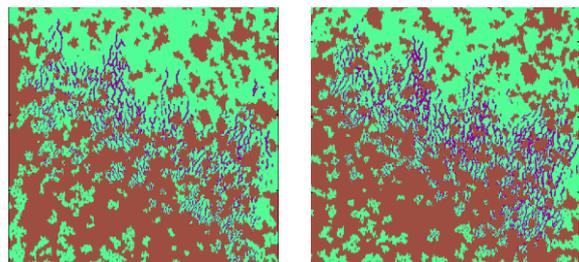
2 MPS simulations with different channel orientations

Isatis 2017 simplifies software use

- Isatis now integrates the library PROJ4 from OSGeo to facilitate **coordinate conversion** between different projection systems.

- **Get to know Isatis quicker**. Case studies are now made directly accessible from Isatis Data File Manager.

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