TerraEx - a GeoWeb app for world-wide content-based search and distribution of elevation and landforms data

Terrain Explorer (TerraEx) is the first world-wide content-based search application for landscapes. Using 3" resolution world-wide DEM as an input it finds and displays, in the form of a similarity map, locations in the world where landscapes are similar to a user-selected query.

TerraEx is a publicly available, full service GeoWeb application. It also doubles as the most convenient distributor of global 3" DEM data, the global map of geomorphs, and the global map of terrain relief.

Search example - dunes

The landscape search starts with a user selecting a location; the histogram describing a local landscape in this location (a query) is set aside to be compared one-by-one with histograms from all motifs in the world-wide grid. We use the Ruzicka similarity measure between two histograms; it yields a value between 0 (not similar at all) to 1 (identical). The result of this comparison is the spatial layer containing values of similarities between a query and local landscapes. This layer – a similarity map – is displayed in TerraEx with a color gradient indicating similarity values. Visual examination of the similarity map provides information on where in the world are the landscapes similar to the query. The time from issuing a query to displaying a similarity map is about 10 sec.