EarthEnv-DEM90 pits and spikes detection based on GTOPO30 global dataset
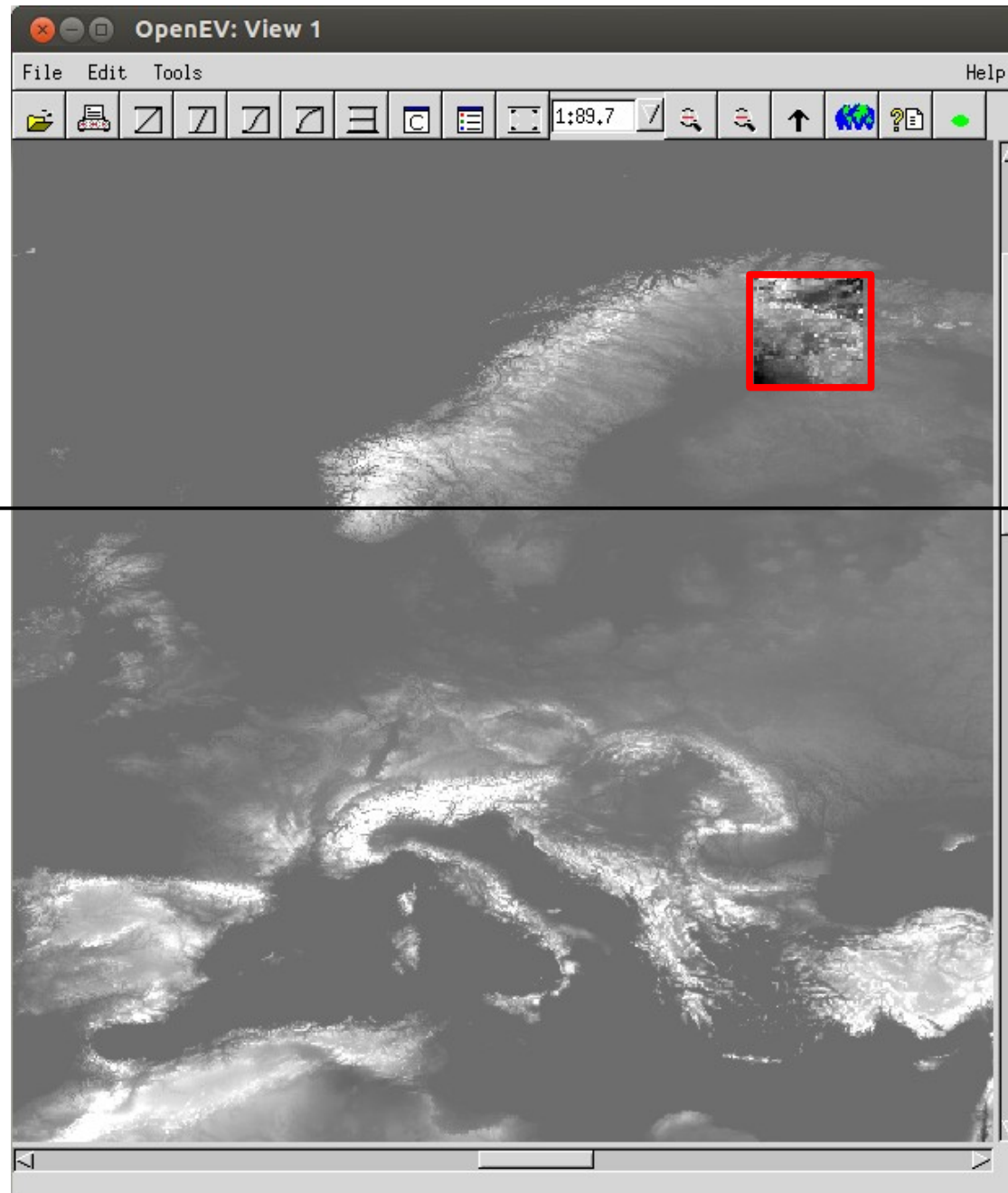
Giuseppe Amatulli

Study area

Outliers identification method
(a preliminary analysis by a parametric approach)

- GTOPO30 cubic re-sampling to 3arc-second pixel size

- Calculate GTOPO3mean considering 7 pixels around each pixel

- Calculate GTOPO3stdev considering 7 pixels around each pixel

Spikes =

EarthEnv-DEM90 > GTOPO3mean + 15*GTOPO3stdev

Pits =

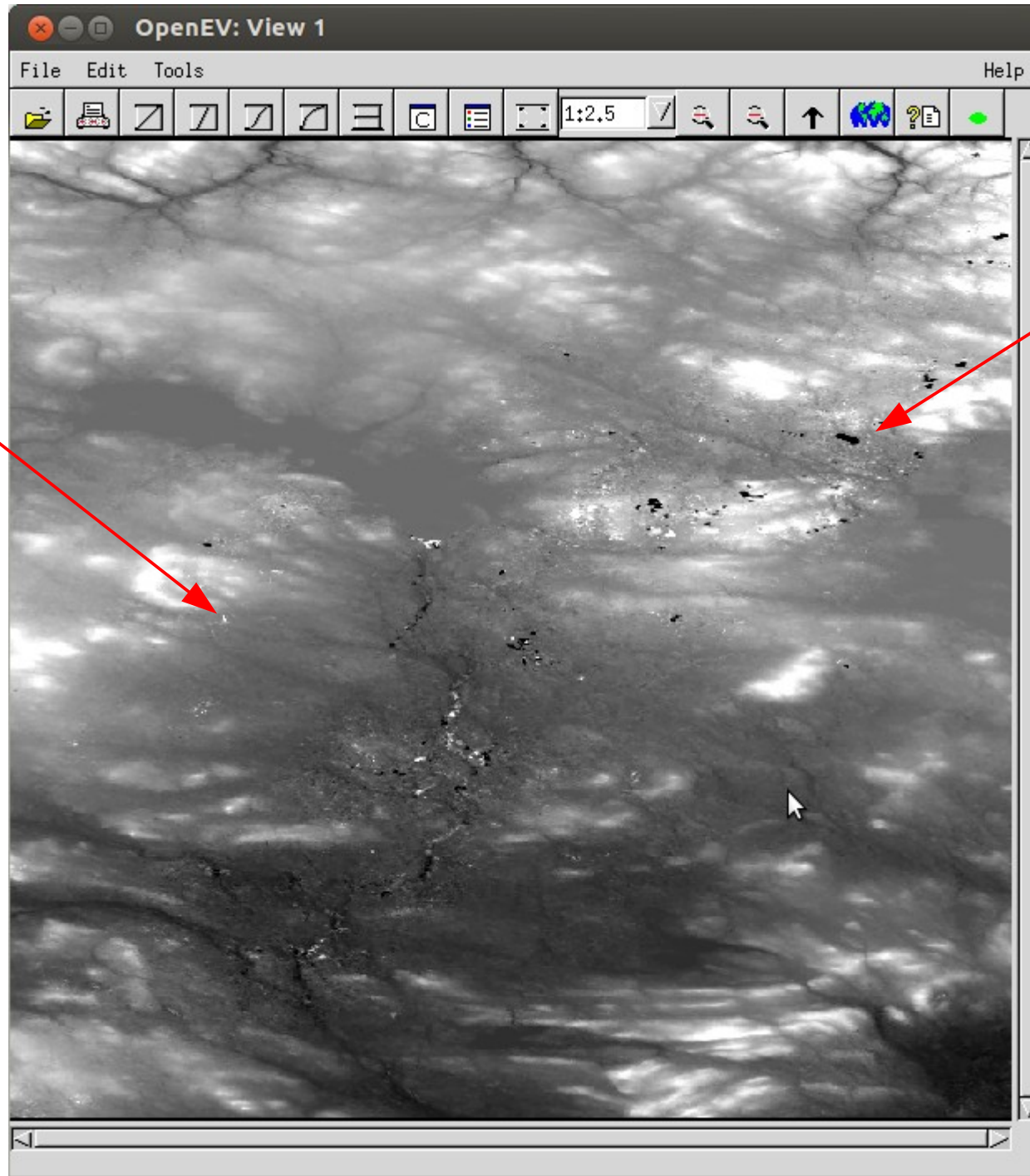EarthEnv-DEM90 < GTOPO3mean - 35*GTOPO3stdev
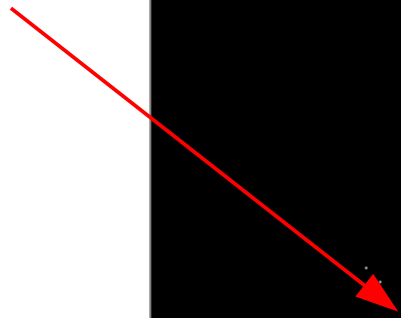
EarthEnv-DEM90
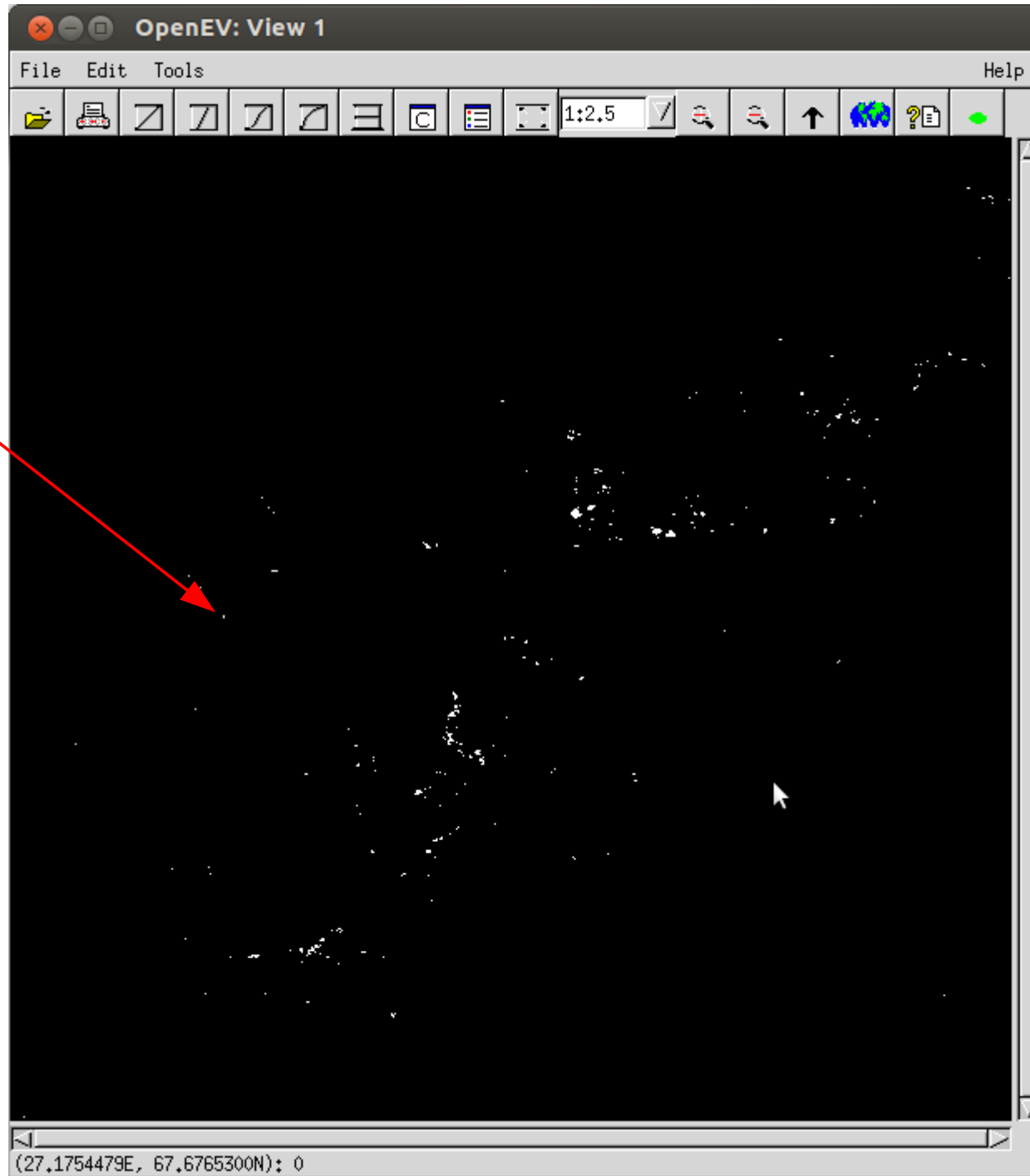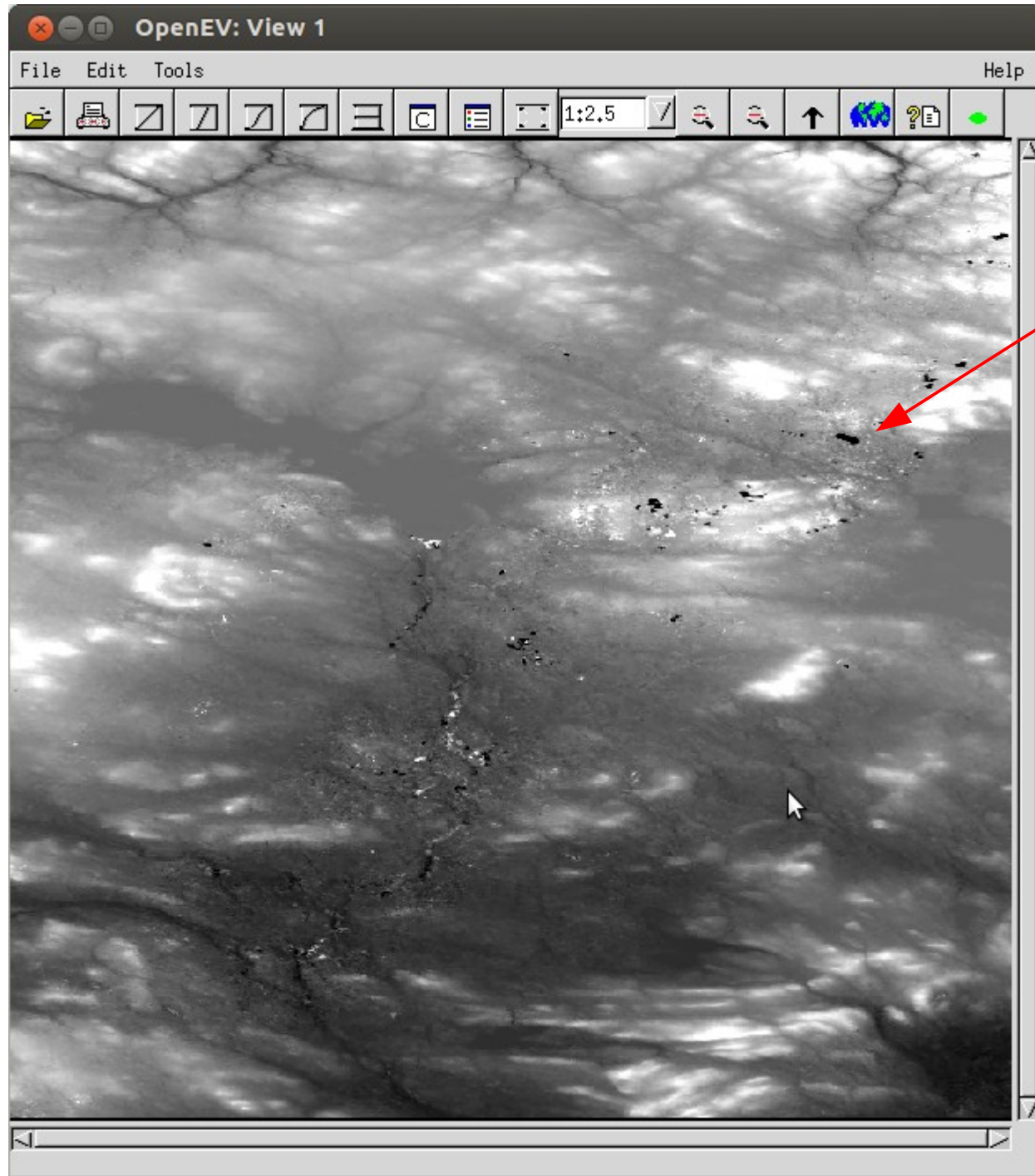
EarthEnv-DEM90

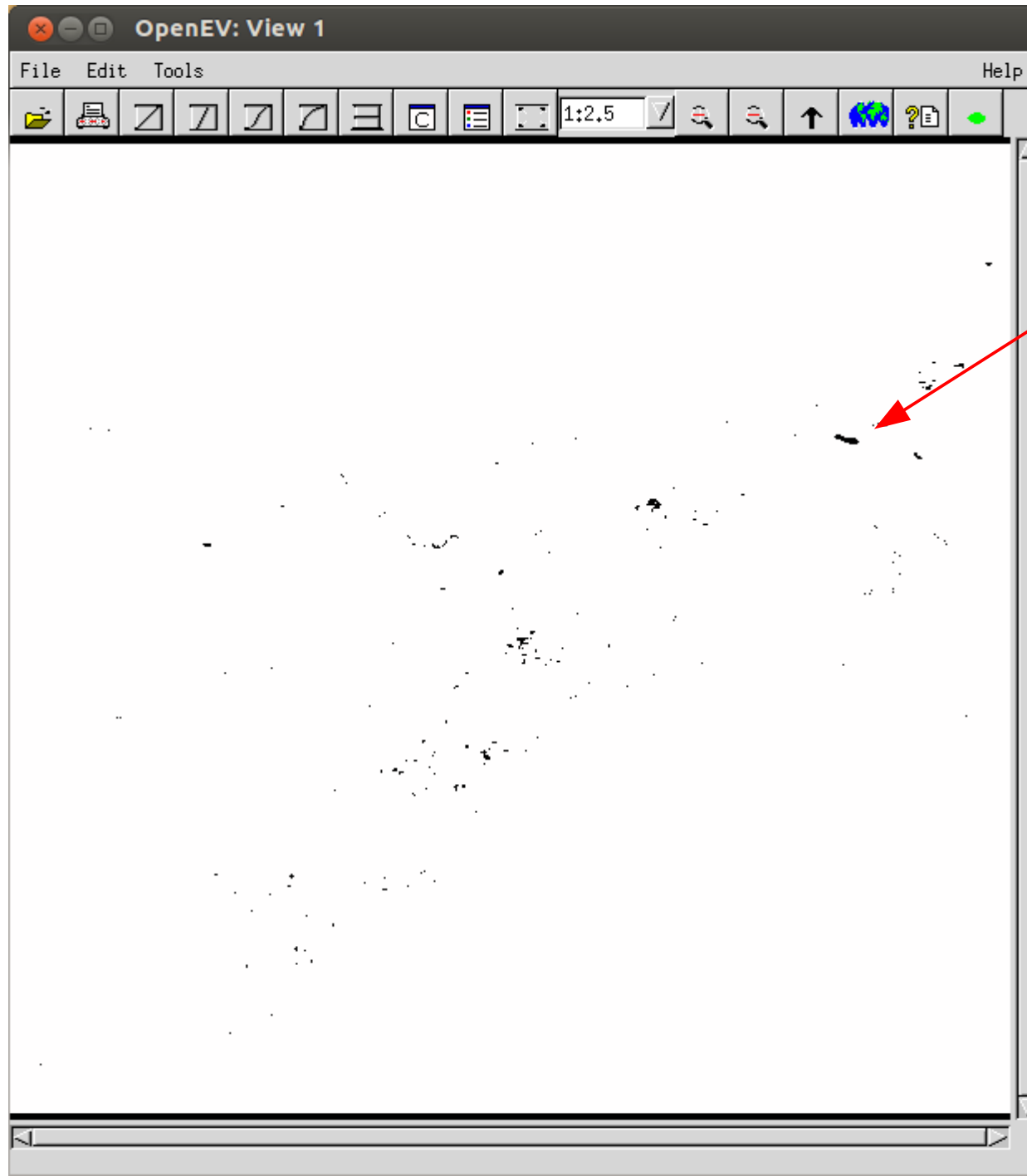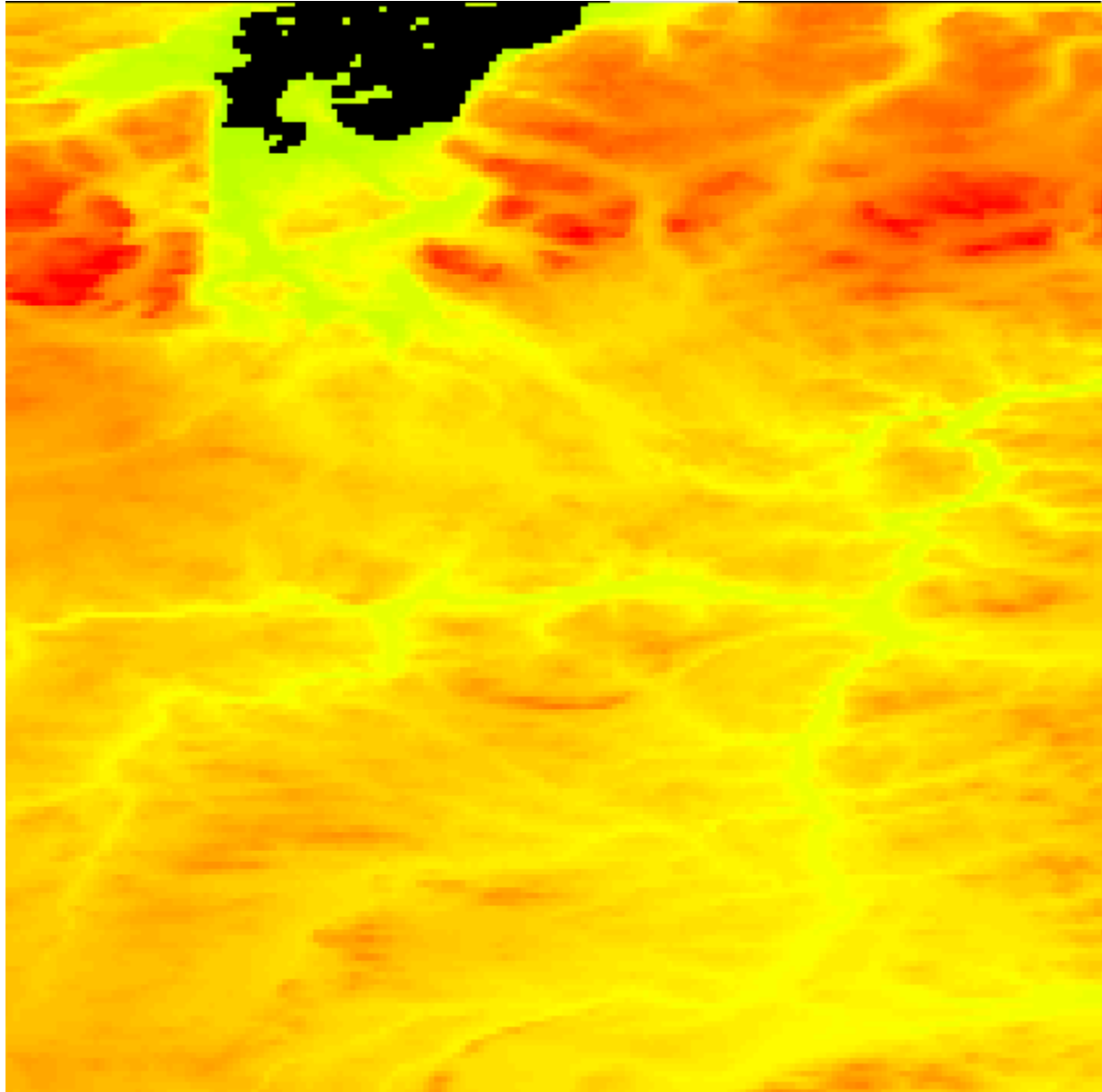# EarthEnv-DEM90

EarthEnv-DEM90

Proposed
outliers identification method
(non-parametric approach)

K-nearest neighbour clustering

- Euclidean distance (suitable for large dataset)

- Mahalanobis distance (computationally expensive)

1 pixel(3-arc second) shift GTOPO30(GLSDEM) -> EarthEnv-DEM90

1 pixel(3-arc second) shift GTOPO30(GLSDEM) -> EarthEnv-DEM90