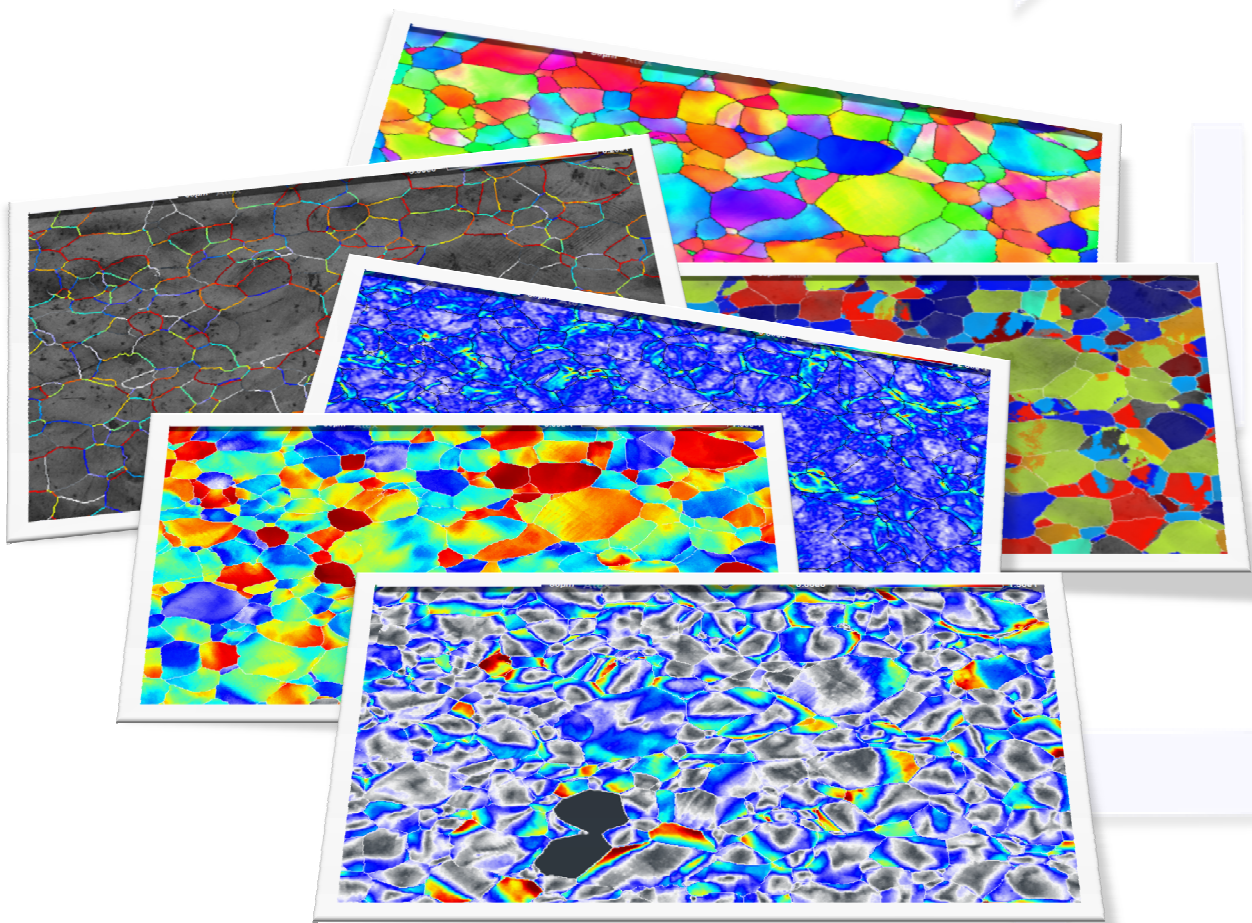
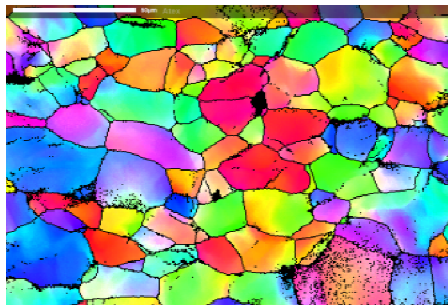


Analysis tools for 2D orientation maps

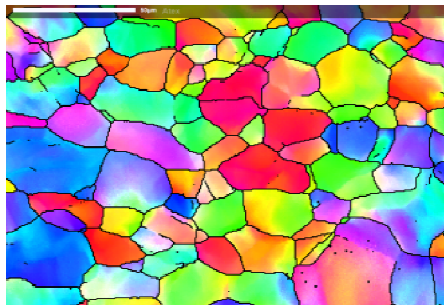


Data corrections

- ▲ No solution correction, spikes correction
- ▲ Data filtering (Kernel Kuwahara, Median Filters...)



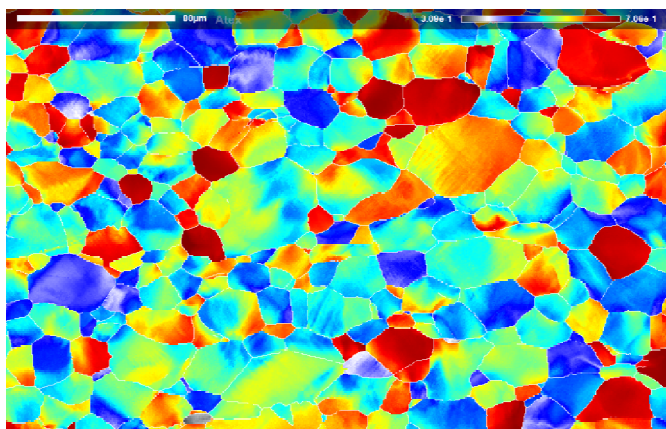
Before correction



After correction

Orientations

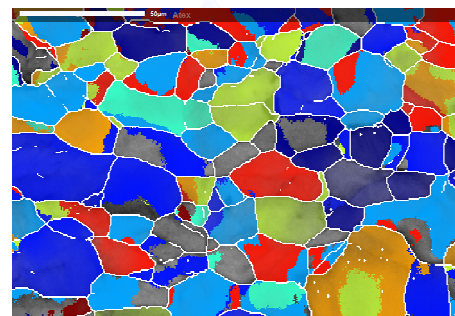
- ▲ I.P.F Maps
- ▲ Deviation from stable orientations
- ▲ Generalized Schmid factor



Generalized Schmid factor map of rolled IF steel for (111)[110] slip



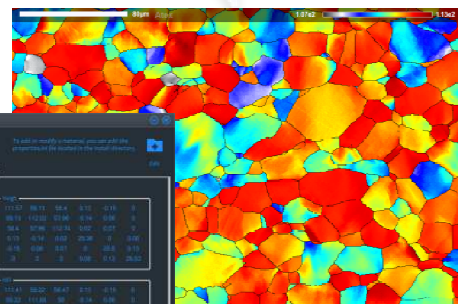
Surface fraction of material orientation in the vicinity of stable orientations of rolled IF steel



Corresponding map of disorientation from stable orientation of rolled IF steel

Properties

- ▲ Voigt, Reuss and Hill assumptions
- ▲ Mechanical, thermal, electrical properties



Map of C_{1111} component of elastic constants (Voigt assumption)

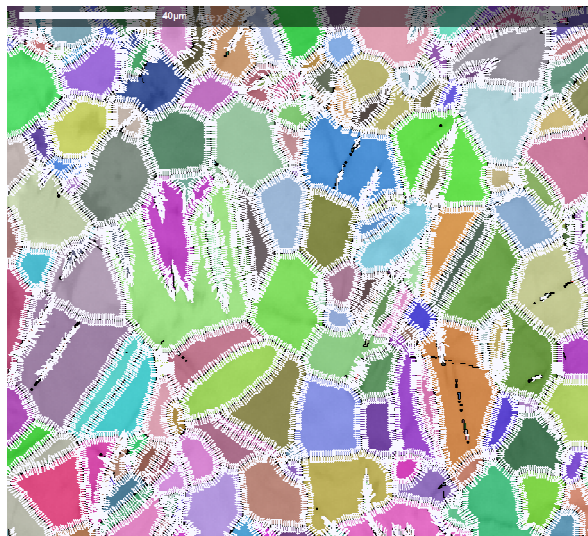


Average elastic stiffness of the polycrystal

Analysis tools for orientation map

Boundaries

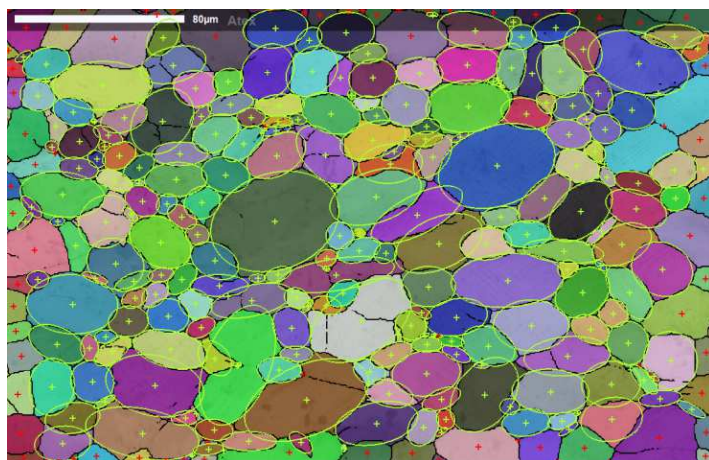
- ▲ Disorientation / Axis
- ▲ C.S.L. Detection
- ▲ Twins
- ▲ Normals of the plane boundaries



Normals of the grain boundaries

Grains

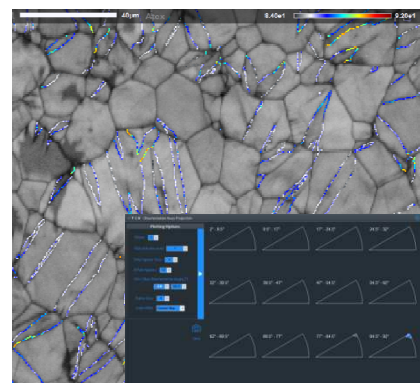
- ▲ Grain and first neighbors detection
- ▲ Grain shape
- ▲ Twins Surface fraction detection



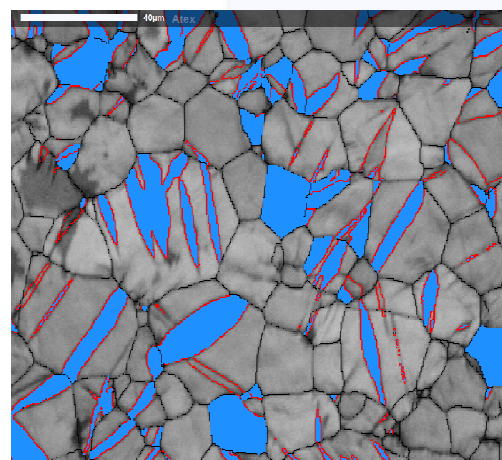
Grain shape approximated by an ellipse



Grain boundaries disorientation and projection of the disorientation axis in titanium



86°/[-11.0] twin boundaries and projection of the disorientation axis in titanium

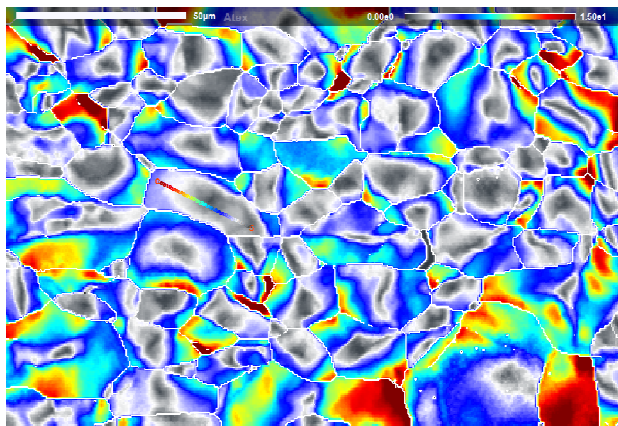


86°/[-11.0] twins detection → twin surface fraction

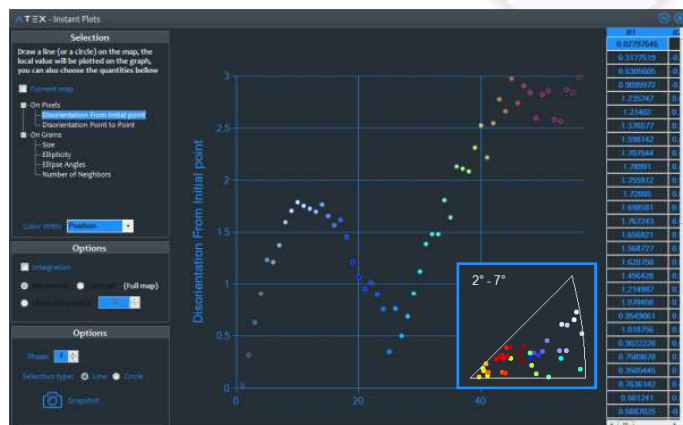
Analysis tools for orientation map

Intra granular quantities

- Internal disorientation from gravity center, from average orientation

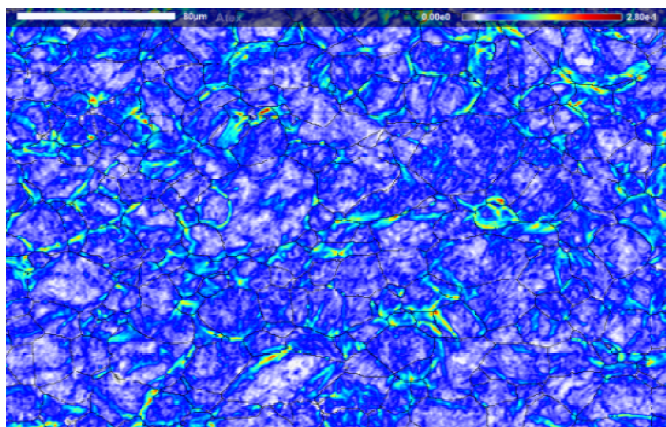


Map of the disorientation between the orientations of the gravity center of the grains and all the other pixels constituting the grain

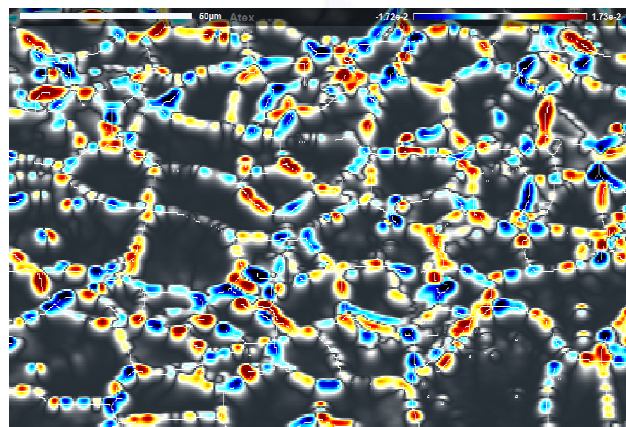


Disorientation along the line drawn on the left map and projection of the axes of disorientation on inverse pole figure of projection

- Geometrically Necessary Dislocations Densities
- Disclinations Densities



Map of Geometrically Necessary Dislocation density, (entrywise norm of the Nye tensor)



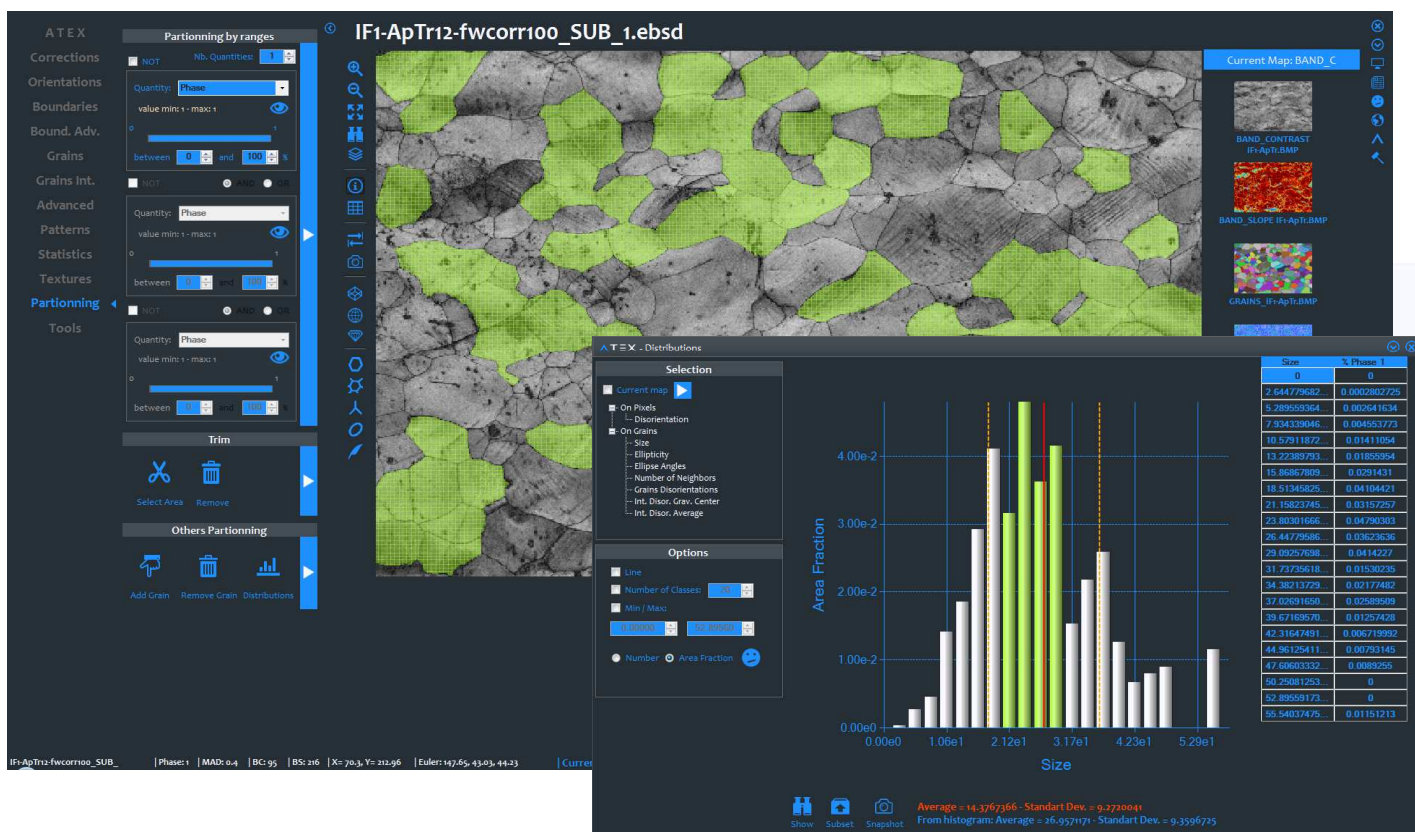
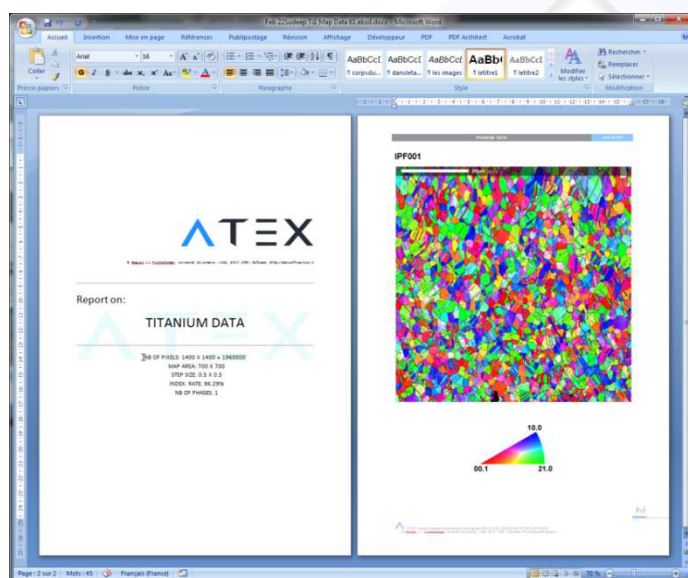
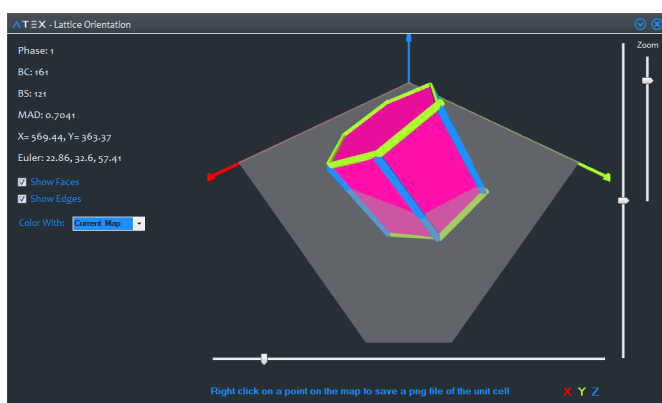
Map of component 33 of the disclination density tensor [1]

[1] B. Beausir, C. Fressengeas, Disclination densities from EBSD orientation mapping, International Journal of Solids and Structures 2013, 50, pp.137-146.

Analysis tools for orientation map

Intra granular quantities

- ▲ Distributions (Disorientation, Grain size...)
- ▲ Misorientation Correlation Function
- ▲ Report
- ▲ 3D Lattice local orientation
- ▲ Partionning



Analysis tools for orientation map