StrainTool - Improving the Mapping of Tectonic Strain in Eurasia

 $\underline{\text{D.Anastasiou}}^{1,2}$, X. Papanikolaou^{1,2}, V. Kapetanidis^{1,3}, V. Tsironi¹, A. Ganas¹, D. Paradissis²

¹Institute of Geodynamics - National Observatory of Athens

²Dionysos Satellite Observatory - Higher Geodesy Laboratory, National Technical University of Athens

³Department of Geology, National and Kapodistrian Univarsity of Athens

*https://dsolab.github.io/StrainTool

*dganastasiou@gmail.com

*dganastasiou@gmail.com

*line for the occupion of 10 years from his death of 10 years fr

Presentation Structure

Introduction

Open Source Software StrainTool v1.0

Data analysis and Results

Validation - Discussion

Conclusions

Introduction

- StrainTool is a free and open-source software.
- Cooperation between the National Technical University of Athens (NTUA) and National Observatory of Athens (NOA) under EPOS-IP project.
- User-friendly software can be used directly by the scientific community.
- Pyhton programming language: free, flexible and cross-platform-compatible nature.
- Software's development was performed using Github.
- Input a list of data points along with their tectonic velovcities.
- Estimate Strain Tensor parameters.

Open Source Software StrainTool v1.0

StrainTool has three basic components:

- pystrain: A python pachage.
- StrainTensor.py: the main executable.
- A list of shell scripts to plot results from StrainTensor.py

TODO: structure design

Python Package pystrain

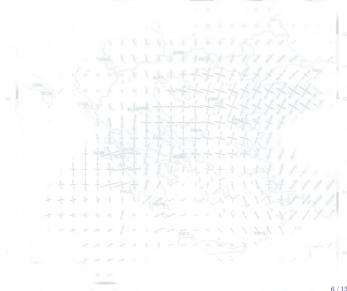
pystrain the core part of the project.

Python functions and classes, enable computation of strain tensor.

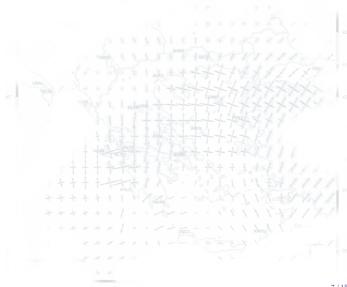
The package includes:

- iotools: input/output classes to parse ASCII files.
- geodesy: functions for basic geodetic calculations.
- grid.py: a simple grid generator
- strain.py: main class and necessary functions for estimation of strain tensor parameters

Estimate strain tensor parameters



Shen Algorithm

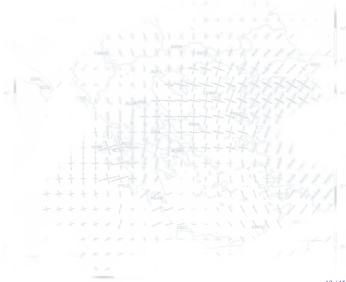


Distance-dependent weighting

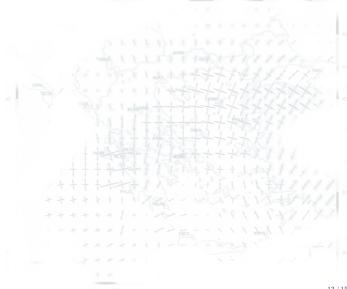
Spatial weights



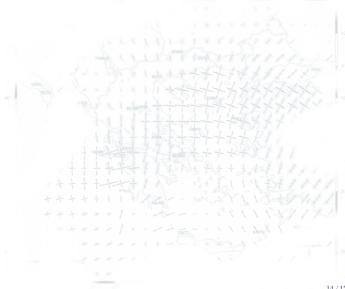
Input Datasets



Validation



Conclusions



Thank you for your attention!



