Master Sciences de la Terre et des planètes, environnement
(ST207) Spatial data : from field to 3D modeling

Responsable

Yoann QUESNEL
yoann.quesnel@univ-amu.fr

Descriptions

Code : LSTBU17

Nature : Unité d'enseignement

Domaines : Sciences et Technologies

Informations

Composante : Observatoire des Sciences de l'Univers - Pythéas (OSU)

LANGUE(S) D'ENSEIGNEMENT

Anglais

CONTENU

Introduction to photogrammetry and 3D geomodeling - Geological/numerical mapping of the Allauch massif - Advanced use of GIS/geomodeling softwares for 3D representation of field data - Relief mapping using photogrammetry - Subsurface geophysical imaging- Processing geospatial, geophysical and geological data - Drawing maps, 2D profiles, 3D views and models - Writing a scientific report

COMPÉTENCES À ACQUÉRIR

1.5 - Use the tools of geology, biology, mathematics, chemistry, physics, statistics and computer science to solve Earth science problems
2.6 - Use software to map and visualize measurements or experimental data in the earth sciences
3.1 - Present scientific findings in Earth sciences in a structured manner, orally and in writing
3.3 - Produce a written synthesis of information on an Earth science issue - in French and English
5.4 - Know how to use professional field and laboratory tools in earth sciences: hammer, compasses, magnifying glasses, microscopes, etc
5.5 - Know how to use professional technological tools in the field and laboratory - GPS, geophysical equipment, etc. - in earth sciences.

BIBLIOGRAPHIE, LECTURES RECOMMANDÉES

Some references in english:

- Caumon et al. (2009). Surface-Based 3D Modeling of Geological Structures. Math. Geosciences, 41, 927-945, doi:10.1007/s11004-009-9244-2

- Guyonnet-Benaize, Lamarche et al. (2010). 3D structural modelling of small-deformations in poly-phase faults pattern. Application to the Mid-Cretaceous Durance uplift, Provence (SE France). J. of Geodynamics, 81-93, doi:10.1016/j.jog.2010.03.003

- James, M. R. & Robson, S. Straightforward reconstruction of 3D surfaces and topography with a camera: Accuracy and geoscience application. Journal of Geophysical Research 117, (2012).

- James, M. R. & Robson, S. Mitigating systematic error in topographic models derived from UAV and ground-based image networks: MITIGATING SYSTEMATIC ERROR IN TOPOGRAPHIC MODELS. Earth Surface Processes and Landforms 39, 1413-1420 (2014).

- Harwin, S., Lucieer, A. & Osborn, J. The Impact of the Calibration Method on the Accuracy of Point Clouds Derived Using Unmanned Aerial Vehicle Multi-View Stereopsis. Remote Sensing 7, 11933-11953 (2015).

- James, M. R., Robson, S., d'Oleire-Oltmanns, S. & Niethammer, U. Optimising UAV topographic surveys processed with structure-from-motion: Ground control quality, quantity and bundle adjustment. Geomorphology 280, 51-66 (2017).

- Milsom, Field Geophysics (Wiley)

- Telford et al., Applied geophysics (Cambridge), consultable à la BU de StJérôme

- Witter (2015). GOCAD® Mining Suite Software as a Tool for Improved Geothermal Exploration. Proceedings of the World Geothermal Congress.

PRÉ-REQUIS OBLIGATOIRES

Skills from Bachelor in geosciences: geological mapping, geophysical methods, introduction to GIS

VOLUME HORAIRE

- Volume total: 34 heures
- Cours magistraux: 4 heures
- Travaux pratiques: 30 heures

CODES APOGÉE

- LSTBU18 [ELP]
- LSTBU18A [ELP]

M3C

Aucune donnée M3C trouvée

POUR PLUS D'INFORMATIONS

Aller sur le site de l'offre de formation...

Dernière modification le 10/06/2024