SUB-TOPIC

Here the sub-unit for both the online course and training module can be described in more detail.

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| **Course type** | SUB-TOPIC | |
| **Title** | Monitoring Lakes and Rivers using Altimetry | |
| **Coordinator** | Roelof Rietbroek | |
| **EOAFRICA RDF Consortium Partner** | ITC-UT | |
| **Part of Training Module** | TM3: Water and Energy budgets (Coordinator: Zeng) | |
| **Part of Online Course** | OC3: Water and Energy budgets from Space (Coordinator: Zeng) | |
| **Introduction** | Water availability on land is critically linked to fresh water sources from rivers and lakes. A thorough understanding of the water budget and its connection with droughts and socio-economic activities, therefore requires modelling and observation of inland waters. However, in situ measurements of river discharge and lake heights may not always be up to date or available. The use of satellite observations is therefore an appealing alternative to monitor inland waters. This training material helps students to get acquainted with the observation principles of radar altimetry. It also helps them to understand the possibilities and limitations which these techniques can offer for the monitoring of lake levels and river heights and discharge. | |
| **Learning outcomes** | On completion of this topic, the participant will be able to:   1. Understand the measurement principle of radar altimetry, and the concept of retracking 2. Understand the concept of a river rating curve 3. Execute a jupyter notebook demo which demonstrates an application of Sentinel data for an inland water 4. Evaluate the jupyter notebook results in terms of their usability for water budget studies 5. OC3 only: Create a geospatial and time visualization of radar altimetry data in an area of interest | |
| **Teaching and learning approach** | Self-study: Reading material and watching a video on the moodlecloud instance (2 hours). Jupyter notebook assignment showcasing an application of radar altimetry for inland waters (location tbd, Tana river?, 2 hours). For the online course only: 4 hours assignment to visualize data in another are of interest | |
| **Allocated time per teaching and learning method (hours)** | Movies/Webinar | 0.25 hours |
| Presentation | 0 hours |
| Practical Assignment | 2 hours  (+4 hours for OC3) |
| Reading Material | 1.75 hours |
| Quizzes | 0 hours |
| Total | 4 hours, (OC3: 8 hours) |
| **Entry requirements** | Students need to have had an introduction to jupterlab computing environment and the dias servers | |
| **Assessment mode (optional)** | Answering a variety of questions from the jupyter notebook assignment. | |
| **Technical requirements** | Access to a jupyter lab instance (either on the innovation lab or under own management). Users may need to have an account on an appropriate dias server to download the appropriate datasets. | |