Transponder Testing in Austria - Project GAVDOS

Our transponder: Receives, amplifies and returns the signals emitted from satellite altimeters – optional: sets time tags for along track error recovery

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What did we do by now !

- First inspection of the transponder did not show any problems after “lay-days” of more than five years.
- First test-measurements to JASON-1 along two sub-tracks of JASON near Graz, Austria did not show any response.
- The transponder was then completely re-examined by the Institute of Wave Propagation and Communication, Graz.
- Result: We could attain an amplification of about 77 dB which is near to the original specifications.
- We established contacts with the JASON/ENVISAT teams for further test measurements (e.g. range gate setting) and later evaluation. We received great support !!!
- Five further test measurements (3 to JASON and 3 to ENVISAT) were successful (at least from the transponder point of view).

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Successful example LRNZ

- **The site LRNZ (near the Austrian/Slovenian border) lies below the same track crossing Gavdos some minutes later.**
- **Height transfer from this site to Gavdos or equivalently the monitoring of the radial component of the altimeter-satellite may be an important item – as demonstrated with ERS-2 between Switzerland and an oil platform in the North-Sea some years ago.**
- **Therefore we determined the precise coordinates of LRNZ by GPS and levelled the transponder reference height .**

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Successful Example LRNZ

Transponder deployment

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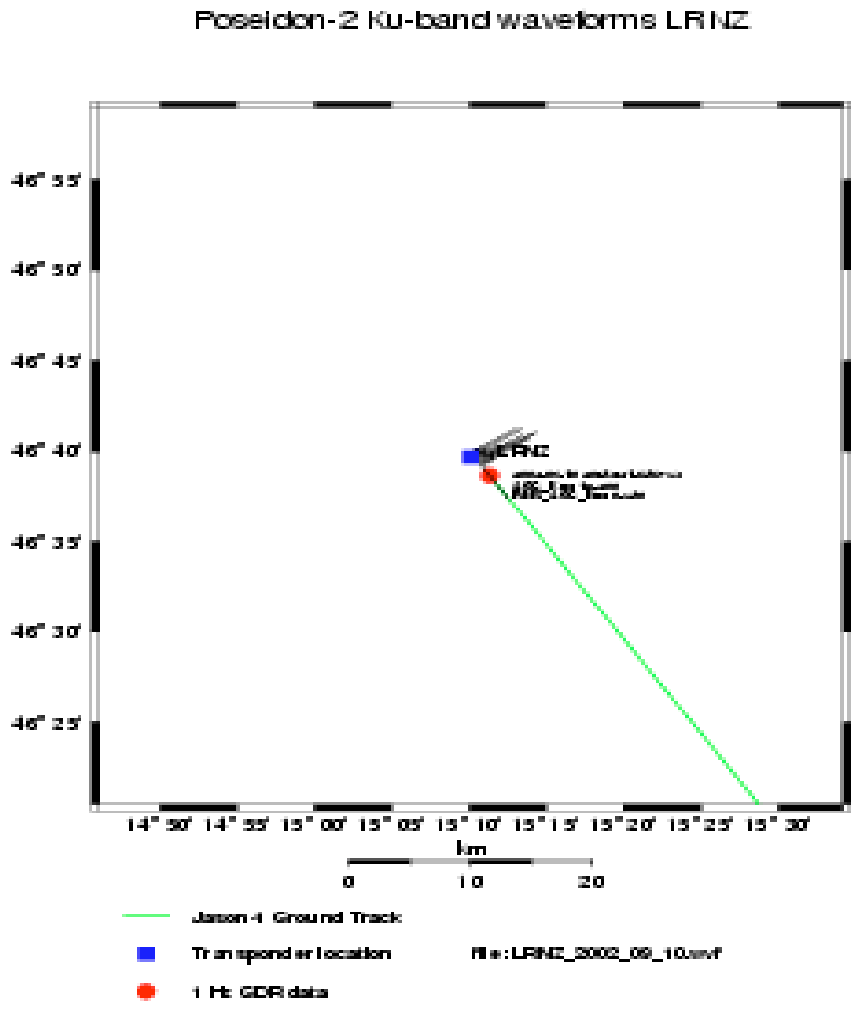
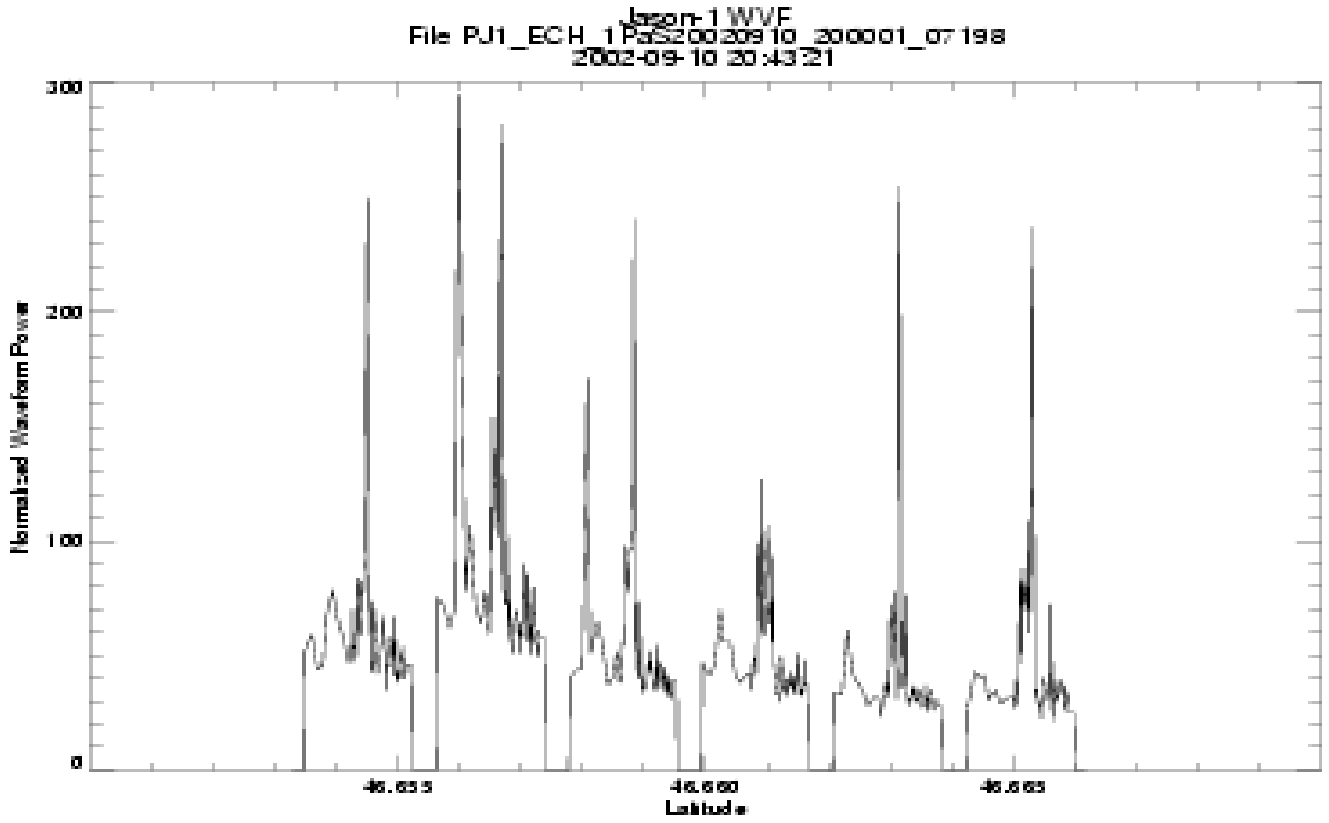
Successful Example LRNZ



Respond of the the satellite altimeter to the transponder signal:

Pass: JASON-1 10.09.2002 decending and crossing Gavdos some minutes later

Transponder Testing in Austria - Project GAVDOS
Successful Example LRNZ



Wave form of the transponder return at LRNZ : Jason-1, 10.09.2002, 20:43.21

Transponder Testing in Austria - Project GAVDOS
Future Plans

- **Measurement of the time delay of the equipment : Just finished; Attained accuracy: ± 20 Picoseconds**
- **But: Delay is dependent on the temperature of the environment and may change in the same order of magnitude;**
- **Technical meetings with Jason-1 team and, hopefully, also with the ENVISAT team as also ENVISAT crosses Gavdos.**
- **Close contacts with the Rutherford Appleton Laboratory, UK (already established)**
- **Preparation for data analysis and interpretation**
- **Deployment to Gavdos after having finished our homework.**