To be prepared for the exercises on <u>Jan 15, 2020</u>
(10 points total)

SPP and DGPS with rtklib

<u>General information:</u>

Data sets:

(1) Static antenna INSA

- $INSA00DEU\_R\_20193591200\_01H\_01S\_MO.rnx$
- $INSA00DEU\_R\_20193591200\_01H\_01S\_MN.rnx$

(2) Rover = NovAtel OEM6 (L1/L2), Base = Trimble NetR9
Test drive on 02.09.2011

- $110902\_092045.obs$
- $INSA245gA.OBS$
- $INSA245gA.NAV$

Use your installation of rtklib v2.4.3 to process and analyse the data stream in post-processing mode with rtkpost.

Task 1 (5 points)

Use data set (1):

Process the 1 hour data set of the static antenna INSA

(a) with the following options:

- processing mode: single
- elevation cutoff: 5°
- ionospheric model: no
- tropospheric model: no
- System: GPS

(b) with the following options:

- processing mode: single
- elevation cutoff: 5°
- ionospheric model: Broadcast
- tropospheric model: Saastamoinen
- System: GPS

(c) with the following options:

- processing mode: single

- elevation cutoff: 5°

- ionospheric model: Broadcast

- tropospheric model: Saastamoinen

- System: GLO

Analyse and compare the results of (a) - (c) according to the following aspects using time series. Plot the information and give the statistical values of mean and standard deviation.

- Load Observation data file and Navigation data file in rtkplot and analyse

  - number of satellites
  - VDOP

- Load Position file in rtkplot and analyse

  - Position in North, East und ellipsoidal height

Task 2 (5 points)

Use data set (2):

Process the kinematic data set in relation to the reference antenna of type Trimble Zephyr Geodetic 2 with the following options:

(a)   - processing mode: single

       - elevation cutoff: 5°

       - System: GPS

(b)   - processing mode: DGPS

       - elevation cutoff: 5°

       - System: GPS

Your Tasks:

- Plot the information and give the statistical values of mean and standard deviation

- Comparison of position in North, East und ellipsoidal height

- Show the two trajectories on google earth and analyse the results