

## Guidelines for the tests:

The tests shall be carried out in different phases. In **phase 1**, all participants shall use the same identical data sets. These are the following:

GRAVI_V3.PTS:	Gravity data,
H_msl_cgjar_v3.zip:	SRTM based digital terrain model, compressed using “Winzip”,
GPS_LEV.PTS:	GPS/levelling control points.

The data sets are available by ftp (Site: ftp.ign.fr; User: auvergne; Passwd: auver). Please note that the GPS/lev file will be updated soon and the new version will also include orthometric heights.

There you can also find a description of the files (Read\_me.txt), a description of the data file formats (Doc\_formats.txt), as well as a paper presented by Henri Duquenne at the 1st IGFS Symposium, Istanbul, 2006 (IGFS\_session\_2\_HD\_revised.PDF).

The files are based on the following reference systems (see also file Doc\_formats.txt):

Ellipsoidal latitudes, longitudes, heights:	ETRS89 (French version RGF93), GRS80 ellipsoid,
Physical heights:	IGN69 system (normal [and orthometric] heights),
Gravity:	IGSN71.

Please note that the SRTM based digital terrain model does not strictly refer to the IGN69 height system, but nevertheless it should not be changed (in phase 1).

Furthermore, in the first phase of the testing, the global geopotential model EIGEN-GL04C up to degree and order 360 should be used (available at GeoForschungsZentrum Potsdam, GFZ). Geoid and/or height anomalies should be computed in a  $1' \times 1'$  grid from  $44^\circ\text{N}$  to  $48^\circ\text{N}$  in latitude and  $0^\circ\text{E}$  to  $6^\circ\text{E}$  in longitude, as well as for the GPS/levelling control points (coordinates given in file GPS\_LEV.PTS). Basically normal heights should be used, but the data set has been complemented also with orthometric heights for groups that prefer to use them. Geoid undulations may be used as interim results and have to be provided as well for the intercomparison with other groups.

All computed values should refer to the GRS80 ellipsoid.

Moreover, in a second phase (**Phase 2**), if somebody wants to optimise his results by testing other data configurations, it is possible to use the French National DTM (it is available upon request after signing an agreement with IGN, with a limit of 10 licences) and different global models, for instance EGM96, or the new EGM2007 that should be available soon (at present, only a preliminary version exists).

After all, each group has to perform the computations following its own procedure, producing height anomalies on a grid as well as for the GPS/levelling control points (height anomalies are preferred for GPS/levelling comparisons because France officially uses normal heights, but orthometric heights on the same points will also be available soon as mentioned above). Together with the numerical results, each group should provide a short document including a description of the applied procedures and a short reference list. The aim of the test is to compare different techniques and to check for methodological differences. In this connection, the existing inconsistency problems (related to the height reference system (IGN69), geodetic reference system ETRS89 (in its French version), and tide system) will be considered (at least partially) by a 1D and 3D regression of the residuals from the GPS/lev comparisons; this task will be carried out centrally (IGeS/EGGP) using the same software for all test results.

All data (grid and results in GPS/levelling points) will be collected at IGeS, and comparisons will be discussed first on the IGeS Forum page ([iges.polimi.it/forum](http://iges.polimi.it/forum)). Each participating group will have to register on the Forum and will receive a user and password. Finally, all results will be collected in a **joint paper**.

We would like to collect all the results by June 2008. It is then planned to have enough time for discussions in the forum before arriving at the final publication of the results.