



Realizace systému WGS84 v neznámém prostředí

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- není bodové pole

- bodové pole je poničeno

- k bodům nejsou dostupné relevantní geodetické údaje

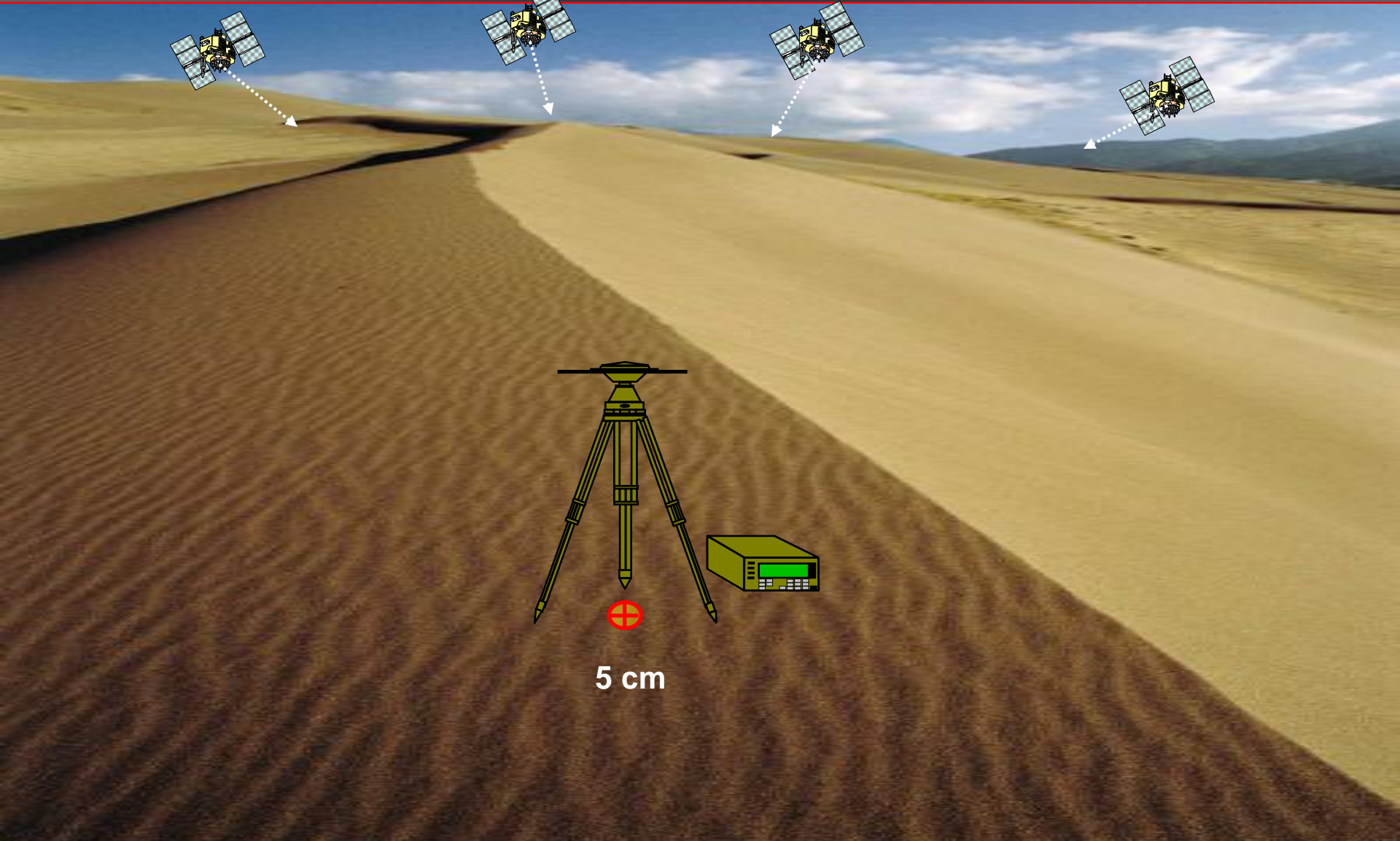
Úkol:

Zaměřit polohu bodu
v systému WGS84 s
geodetickou přesností
(cm)





Autonomní (absolutní metoda) GPS





GRiTs



GRiTs - GPSTk Rinex Tools

File Tools Help

Home File Input Scan obs Edit obs Precise positioning

Input files:

| Name | Type | Path |
|---|---------------|------------------------------|
| <input type="checkbox"/> SolarSystem1975to2050_403.bin | Solar System | C:\Users\janus.INET_VGHMU |
| <input type="checkbox"/> ngs08_1861.atx | ANTEX Antenna | C:\Users\janus.INET_VGHMU |
| <input checked="" type="checkbox"/> nga_1861.atx | ANTEX Antenna | C:\Users\janus.INET_VGHMU |
| <input checked="" type="checkbox"/> fnals.data | Earth Orient. | C:\Users\janus.INET_VGHMU |
| <input checked="" type="checkbox"/> SolarSystem1980to2040_405.bin | Solar System | C:\Users\janus.INET_VGHMU |
| <input type="checkbox"/> 4169111A.16o | Rinex Obs | C:\Users\janus.INET_VGHMU |
| <input type="checkbox"/> 41691160.16o | Rinex Obs | C:\Users\janus.INET_VGHMU |
| <input checked="" type="checkbox"/> 4169109D.16o | Rinex Obs | C:\Users\janus.INET_VGHMU |
| <input checked="" type="checkbox"/> nga18931.eph | SP3 Ephemeris | C:\Users\janus.INET_VGHMU |
| <input checked="" type="checkbox"/> nga18932.eph | SP3 Ephemeris | C:\Users\janus.INET_VGHMU |
| <input checked="" type="checkbox"/> ocean.blq | Ocean Loading | C:\Program Files (x86)\GRiTs |

Add Remove Un/Ch All Rmv All Validate

```


\janus.INET_VGHMUR\AppData\Local\GRiTs\grits.cfg
06:53:56: Loaded GRiTs configuration from file C:\Users\janus
\Projektory\GPS\Test\gritscfg.cfg
06:54:36: Scan Page run: RinSum --input "C:\Users\janus.INET
\Projektory\GPS\Test\4169109D.16o"
06:54:36: Start process (3096) asynchronously
06:54:37: RinSum (3096) finished with exit code 0.
  
```

File Input page - choose input files

GRiTs - GPSTk Rinex Tools



File Tools Help

Home File Input Scan obs Edit obs Precise positioning



Precise Point Positioning

The GPS-RINEX ARL:UT PPP Estimator (Grape), and GRiTs, the GPSTk Rinex Tools

Grape, GRiTs, the RINEX tools, and the GPS Toolkit (GPSTk) are developed by Space and Geophysics Laboratory, Applied Research Laboratories, The University of Texas at Austin (ARL:UT), under sponsorship of the National Geospatial-Intelligence Agency.

To get started, go the Help/GRiTs Help on the main menu. Start on the page labeled 'File Input'

```

08:41:55: Welcome to GRiTs, version 6.0.0 Oct 30, 2015, built with wxWidgets 2.8.12,
running on Microsoft Windows NT ver. 6.2
08:41:55: Clear all options and re-load default config file C:\Users
\janus.INET_VGHMUR\AppData\Local\GRiTs\grits.cfg
08:41:55: Command line program RinSum, Ver 3.1 5/12/13
08:41:55: Scan Page ver. 3.0 Nov 20, 2014
08:41:55: Command line program ResCor, Ver. 5.0 5/18/13 (ed. 4.1 5/23/2013)
08:41:55: Edit Page ver. 1.3 Nov 15, 2012
  
```

GRiTs - GPSTk Rinex Tools

File Tools Help

Home Edit obs Precise positioning

Input files are the checked files on the File Input page.

Verbose Debug Validate

Cycleslip Fixer: Force Force

Kalman Filter: Force Force

0.0000 Ref Pos

name [loading site]

ng of data [data]

20 C, P=1013 mbar, RH=50%

10

Elevation limit (deg): 10.00 Pre-fit Test Threshold: 5.0

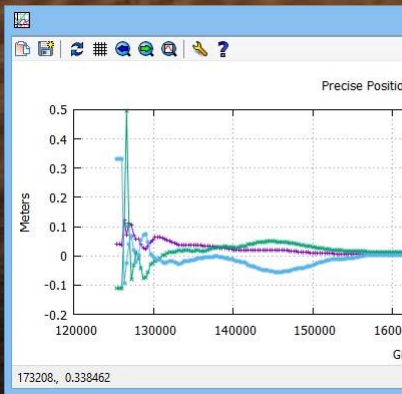
Sat pass minimum (min): 30 Post-fit Residual Limit: 2.0

Plot Results View Log View Output Run

```

GRiTs, version 6.0.0 Oct 30, 2015, built with wxWidgets 2.8.12,
Windows NT ver. 6.2
options and re-load default config file C:\Users
\AppData\Local\GRiTs\grits.cfg
ne program RinSum, Ver 3.1 5/12/13
ver. 3.0 Nov 20, 2014
ne program ResCor, Ver. 5.0 5/18/13 (ed. 4.1 5/23/2013)
ver. 1.3 Nov 15, 2012
  
```

se point positions



Ocean Loading site names

Select a site

| | | |
|--------------------------------|---|-----------------------------------|
| <input type="checkbox"/> _CSOC | <input type="checkbox"/> MSN_ASC | <input type="checkbox"/> MSN_NZ |
| <input type="checkbox"/> _NIMA | <input type="checkbox"/> MSN_DG | <input type="checkbox"/> MSN_SKOR |
| <input type="checkbox"/> _ECUA | <input type="checkbox"/> MSN_KWG | <input type="checkbox"/> MSN_TAH1 |
| <input type="checkbox"/> _ARL | <input type="checkbox"/> MSN_HAW | <input type="checkbox"/> MSN_CAPE |
| <input type="checkbox"/> _ALAS | <input type="checkbox"/> MSN_AUS | <input type="checkbox"/> MSN_PATR |
| <input type="checkbox"/> _SAFR | <input type="checkbox"/> MSN_ARG | <input type="checkbox"/> MSN_EDWD |
| <input type="checkbox"/> _HOLL | <input checked="" type="checkbox"/> MSN_ENG | <input type="checkbox"/> MSN_NSW1 |
| <input type="checkbox"/> _YAKT | <input type="checkbox"/> MSN_BAH | <input type="checkbox"/> MSN_CLAW |
| <input type="checkbox"/> _CHIN | <input type="checkbox"/> MSN_USNO | <input type="checkbox"/> MSN_MAS1 |

Clear Cancel Ok



WGS84

Vývoj systému



Zápis souřadnic bodu s geodetickou přesností:

$50^{\circ} 49' 12.5478''$

$15^{\circ} 22' 48.1245''$

298.59 m

WGS84 (G873) epocha 1999.4

označení

realizace

epocha



WGS84

Vývoj systému



WGS84 (G873) epocha 1999.4 realizace

| Name | Implementation date | | Epoch | Accuracy |
|----------------|----------------------|-----------------------|--------|---------------------|
| | GPS Broadcast Orbits | NGA Precise Ephemeris | | |
| WGS 84 | 1987 | 1 Jan 1987 | | 1-2 meters |
| WGS 84 (G730) | 29 Jun 1994 | 2 Jan 1994 | 1994.0 | 10 cm/component rms |
| WGS 84 (G873) | 29 Jan 1997 | 29 Sep 1996 | 1997.0 | 5 cm/component rms |
| WGS 84 (G1150) | 20 Jan 2002 | 20 Jan 2002 | 2001.0 | 1cm/component rms |
| WGS 84 (G1674) | 8 Feb 2012 | 7 May 2012 | 2005.0 | <1cm/component rms |
| WGS 84 (G1762) | 16 Oct 2013 | 16 Oct 2013 | 2005.0 | <1cm/component rms |

G873

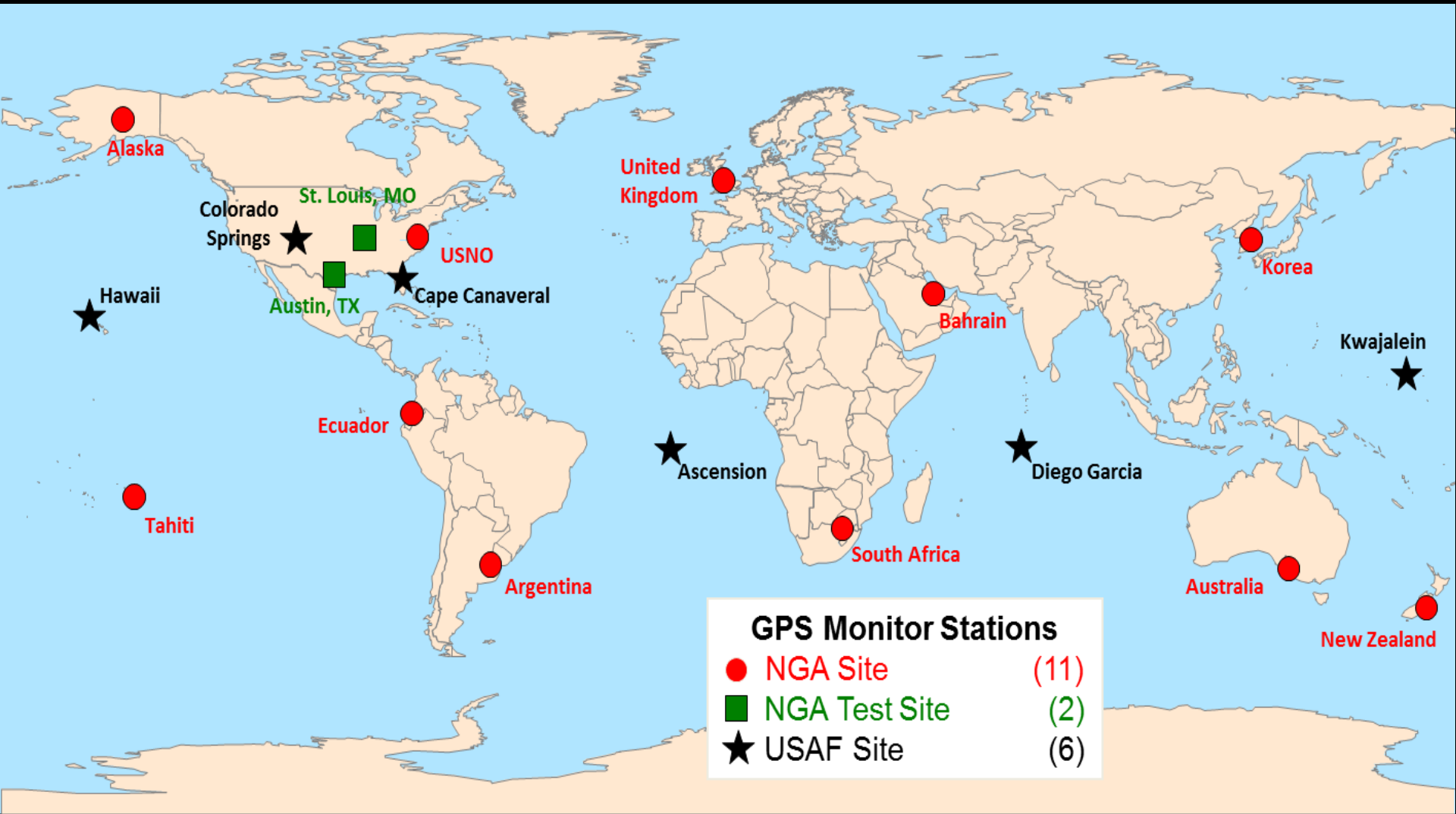
Referenční rámec WGS84 byl zaměřen pouze technologií GPS

Číslo GPS týdne, kdy vešla realizace WGS84 v platnost



WGS84

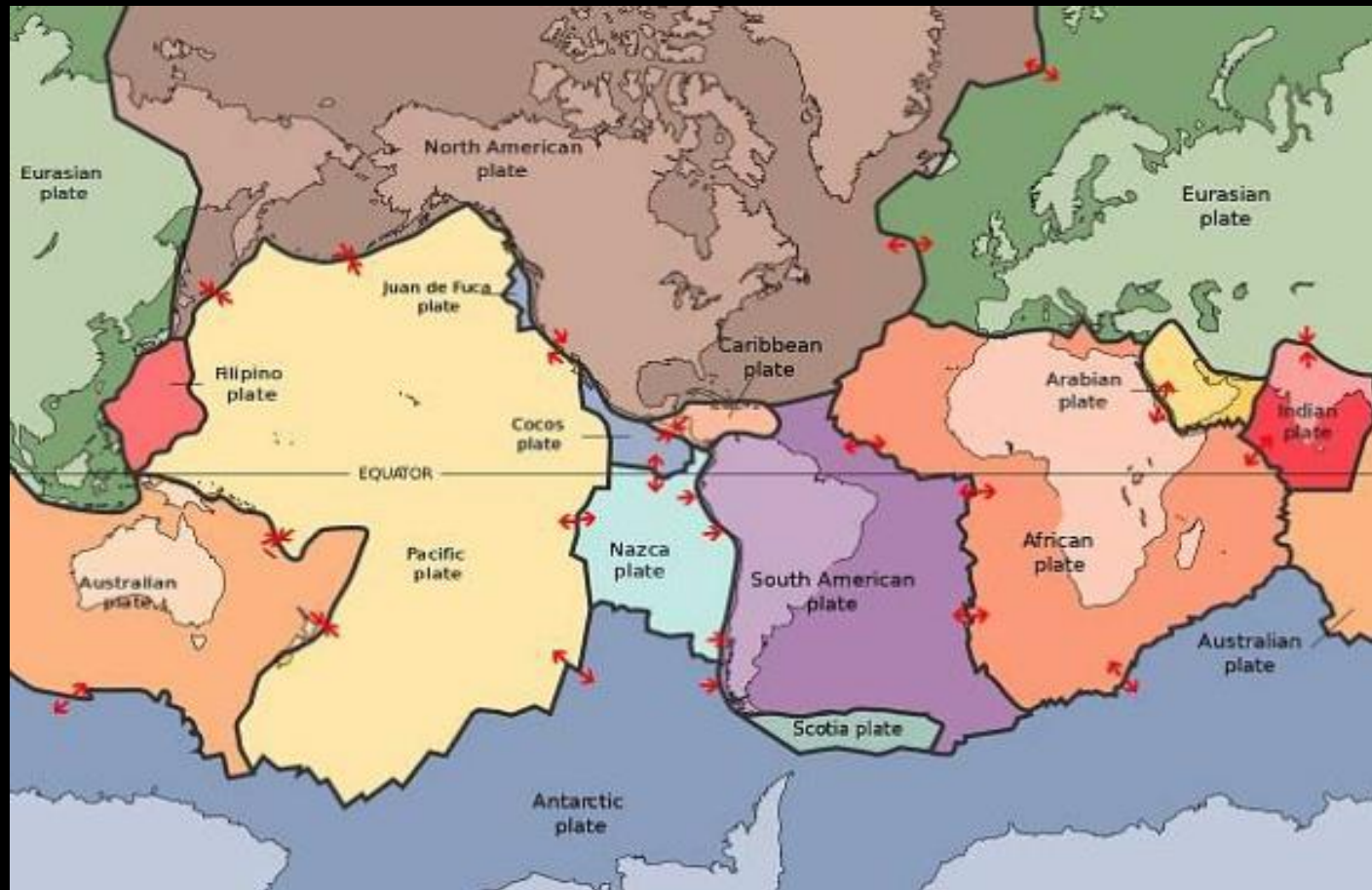
Referenční rámeček



Vliv pohybu tektonických desek, epocha

WGS84 (G873) epocha 1999.4

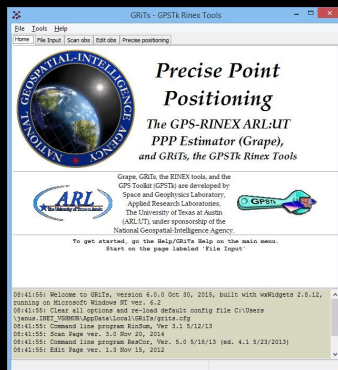
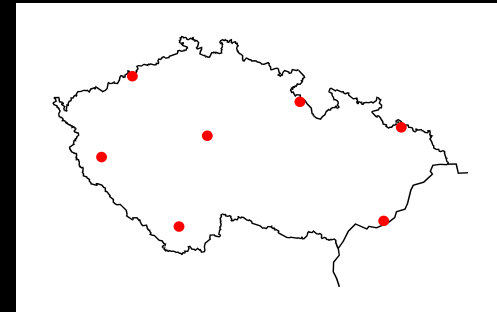
epocha





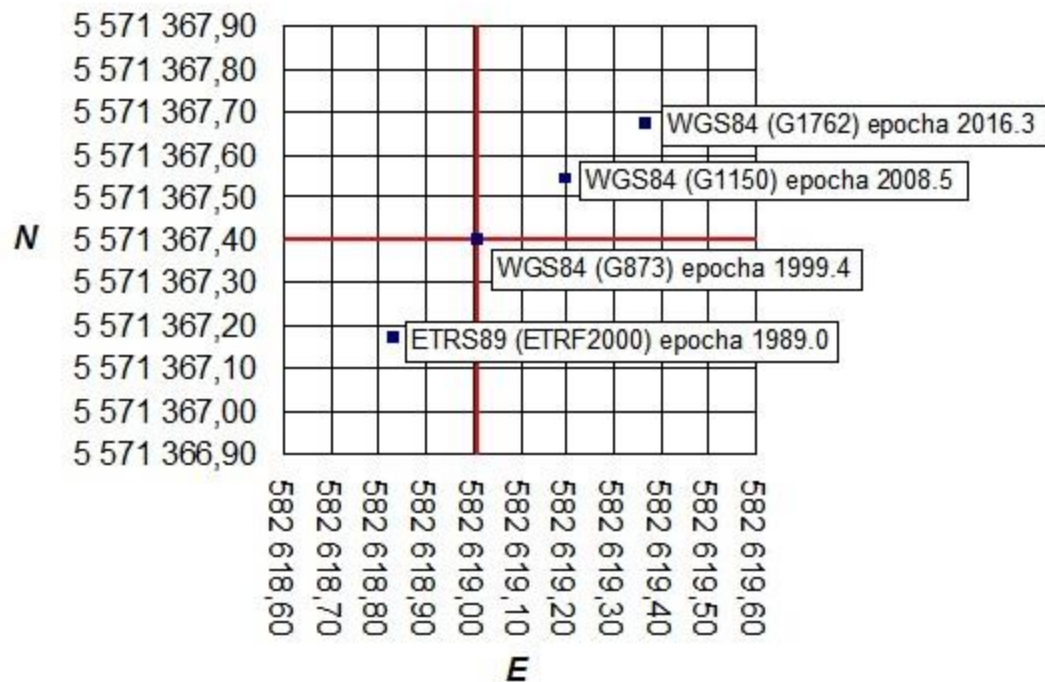
Dnem 1. ledna 2006 bylo nařízením NGŠ v resortu obrany definitivně zrušeno používání systému S42/83. Od téhož dne se v resortu obrany používá na území ČR pouze **WGS84 (G873) epocha 1999.4.**

Kampaň GPS VGSN99
(1. – 16.6.1999).



Výsledkem zpracování absolutního měření GPS jsou souřadnice v aktuální realizaci WGS84 a epoše odpovídající datu měření.

WGS84 (G1762) epocha 2017.1



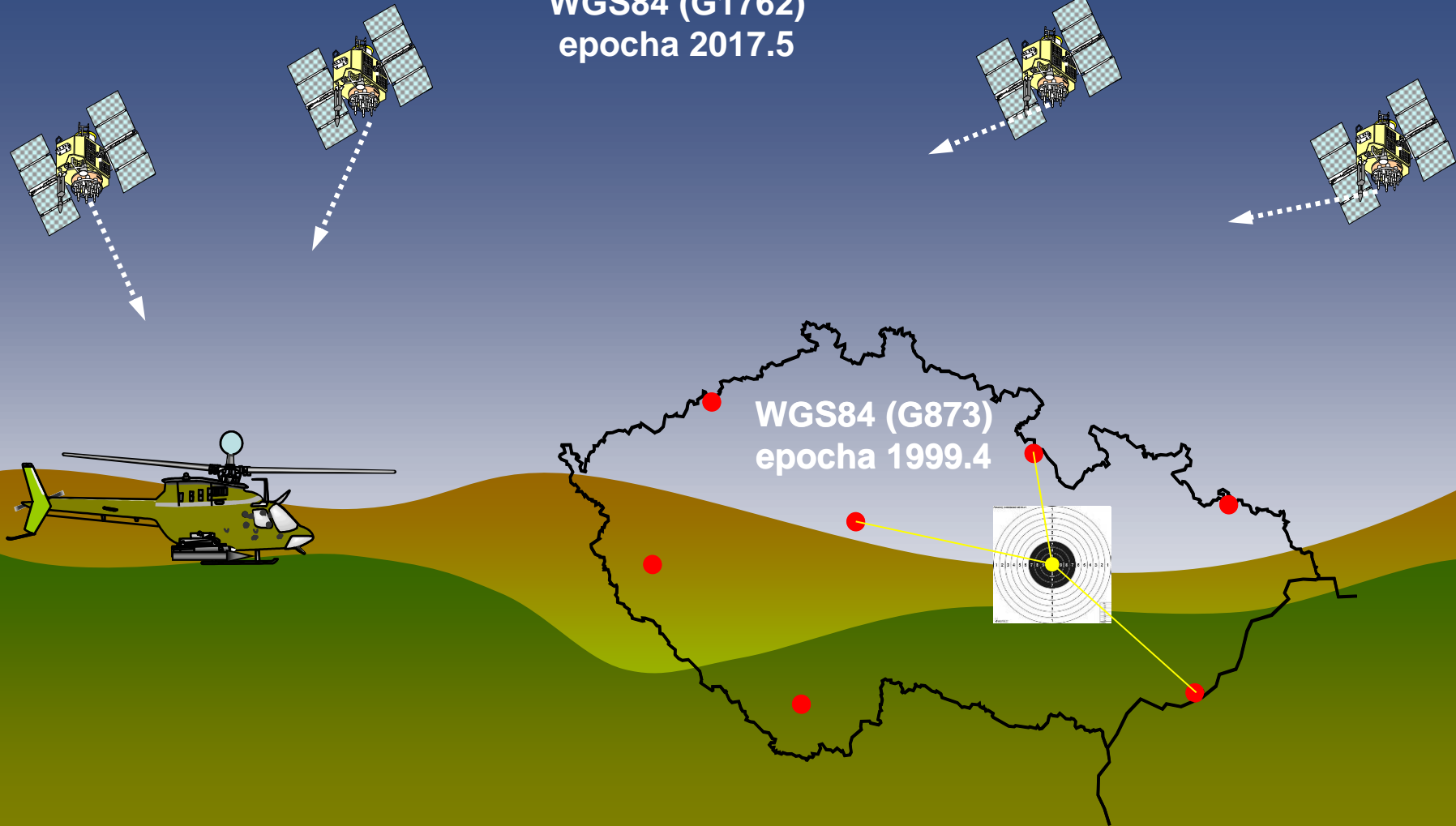


WGS84

Budování a implementace WGS84 v AČR



WGS84 (G1762)
epocha 2017.5





Služba NDA WIPPS



<https://webppp.arlut.utexas.edu>

NGA WIPPS

WGS 84 & ITRF Precise Positioning Service
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Welcome

The National Geospatial-Intelligence Agency (NGA) and Applied Research Laboratories, The University of Texas at Austin (ARL:UT) have partnered to bring you WIPPS, the WGS 84 & ITRF Precise Positioning Service. WIPPS is an online service that implements Precise Point Positioning (PPP) methods to produce very precise absolute position estimates, given several hours of GPS observation data. Results are

System 1984 (WGS 84) solution.
orbit products, yielding a solution in

and login links are at the top of this
-friendly, with in-line help explaining
S in more detail, as well as the

NGA WIPPS

WGS 84 & ITRF Precise Positioning Service
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Username

Password

Login



GRiTs



The screenshot shows the GRiTs - GPSTk Rinex Tools software interface. It features a menu bar (File, Tools, Help), a toolbar, and several panels. On the left, there is a list of input files with columns for Name, Type, and Path. The main area contains various configuration options, including checkboxes for 'Verbose', 'Debug', and 'Validate', and fields for 'Cycle slip Fixer' and 'Kalman Filter'. A 'Run' button is visible at the bottom right. A status bar at the bottom shows coordinates and elevation: '173208, 0.338462'.

- dvoufrekvenční přijímač GPS
- doporučená doba observace 6 až 24 hodin
- data GPS ve formátu RINEX 2.10 (2.11)
- charakteristiky antén GPS (absolutní kalibrace), formát ANTEX, soubor je součástí instalace softwaru GRiTs, měření výšky důsledně k ARP
- přesné efemeridy družic (NGA, IGS), dostupnost 2 dny
- nejsou požadovány meteorologické údaje



Služba NDA WIPPS



<https://webppp.arlut.utexas.edu>

Main **Advanced** Clear Form Load Previous Values

Basic Options

EMAIL ADDRESS

Email Results

FILE UPLOAD

ANTENNA

MARKER NAME (OPTIONAL) 0/60

DESCRIPTION (OPTIONAL)

REFERENCE FRAME SELECTION
 WGS 84
 ITRF

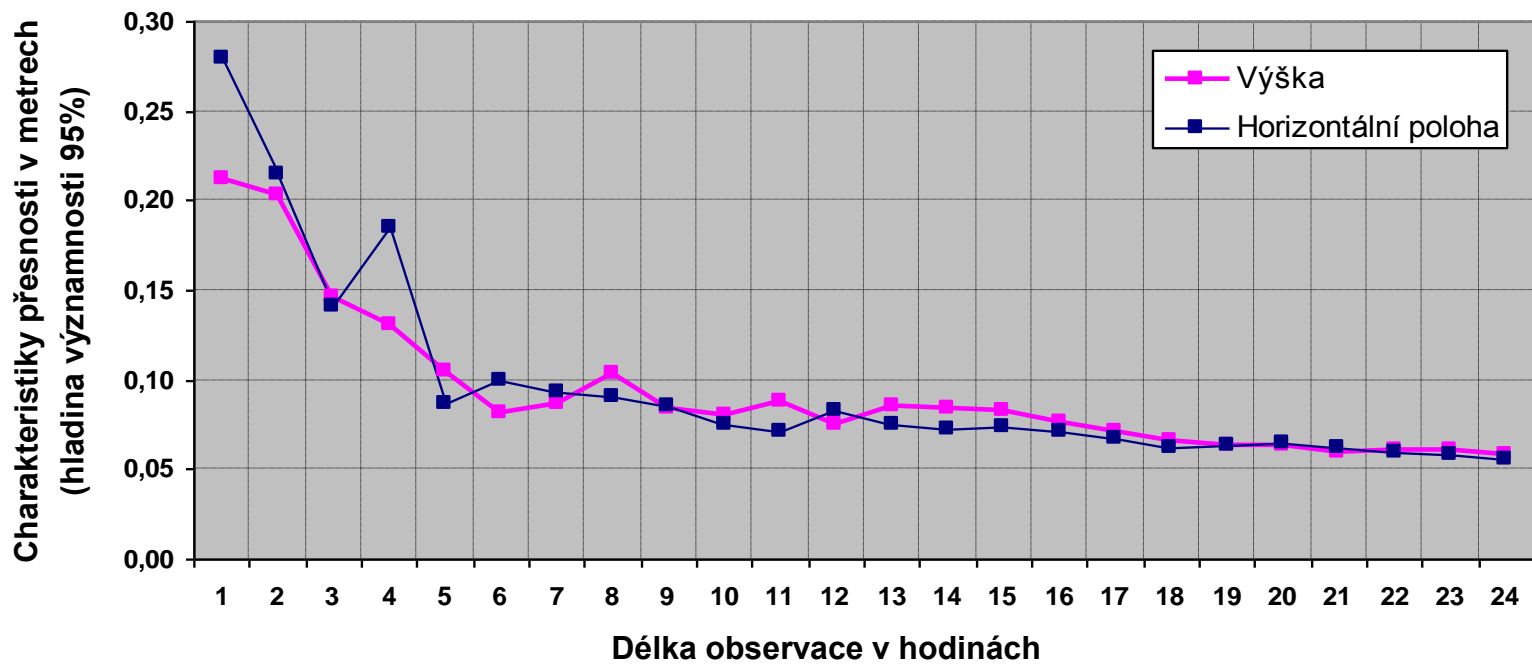
Email Address
Your email address has already been pulled from your user account. This helps maintain security so that only authorized email addresses receive results.

Supported Formats
WIPPS supports GPS/GNSS observation files in RINEX or compact RINEX formats, optionally compressed using any of the common compression types listed on the [help](#) page.

Help & Contact
Click [here](#) if you need assistance with this form. Please direct comments and suggestions to the site administrator at webppp@arlut.utexas.edu.



Služba NDA WIPPS





Děkuji za pozornost!

Dotazy?