PLASMON kick-off meeting

### Who we are: ELTE



#### János Lichtenberger

Space Research Group, Deaprtment of Geophysics and Space Sciences Eötvös University, Hungary



## Eötvös Loránd University

#### **Brief History of ELTE**

- 1635 founded by Péter Pázmány, the Archbishop of Esztergom (Faculties of Arts and Theology)
- 1667 Faculty of Law
- 1769 Faculty of Medicine
- 1777 moved from Nagyszombat to Buda, then to Pest
- Turn of the 18th-19 cc. one of the 15 largest universities in the world
- 1949 Faculty of Science
- 1950 adopted the name of Loránd Eötvös (1848-1919),
- 2001 Lágymányos Campus completed

2000-2003 New faculties



# Eötvös Loránd University



### The Deed of Foundation

Nagyszombat 12 May, 1635



ces/Socia

# Eötvös Loránd University

#### **Faculty buildings**





Fülöp Lénárd 1905 Physics



György Békésy 1961 Medicine

### Nobel Prize laureates



Albert Szent-Györgyi 1937 Medicine



György Hevesy 1943 Chemistry



János Harsányi 1994 Economics



László Lovász

(1948 - )

# Eötvös Loránd University

Student, professor in mathematics



John von Neumann (1903-1957)



## Space Research Group

#### 1965

#### 2009





First radio tracking and Doppler measurements of a satellite

3.2m tracking antenna for satellite reception

### Activities in Space Research

- I. Wave propagation in *space plasmas:* 
  - lonosphere
  - Magnetosphere-plasmasphere
  - A. *in-situ* and
  - B. ground based measurements
  - C. theoretical work

### => Space Weather

### Activities in Space Research

- II. *Remote sensing* applications
  - Crop monitoring and yield estimation
  - Natural hazards monitoring
  - A. *yield estimation* models
  - B. urban heat islands investigation
  - C. atmospheric *radiation transfer* models

## SAS equipments on-board and on the ground

SAS (Signal Analyser and Sampler) series since 1989 *Capabilities*:

- 1~6 electromagnetic signal component measurements on-board and on the ground,
- Event detection and analysis



## SAS equipments on-board and on the ground



UHF TM antenna

Antenna RFA

APPT thruster

SAS2 on Compass-2 satellite: 2006-2007

### Ducted waves in the plasmasphere [Ferencz et al., 2008, JGR]

#### SAS2-K2: 28 February 2007:

Measured signal





.4 .5

.6 .7 .8

t (sec)

790-el1.bin

.1 .2 .3

Ampl

(kHz)



Theoretical model:



## SAS equipments on the ground

AWDAnet – a global network for monitoring Space Weather events





### AWDANet - Europe



## AWDANet - World



## SAS equipments on the ground

#### VR2: a spin off of SASs used in AWDANet







