

# JAKUB VELÍMSKÝ

## curriculum vitae

### Personal data

Birth: April 19, 1975, Ústí nad Labem, Czech Republic  
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### Degrees

2004 RNDr. in geophysics, Charles University in Prague, Faculty of Mathematics and Physics  
2003 Ph.D. in geophysics, Charles University in Prague, Faculty of Mathematics and Physics  
1998 Mgr. in physics, Charles University in Prague, Faculty of Mathematics and Physics

### Study and Employment

2010– Research Assistant, [Dept. of Geophysics, Charles University, Faculty of Mathematics and Physics](#)  
2008–10 Assistant, [ETH Zürich](#)  
2005–7 Research fellow, [Centre of Earth's Dynamics Research, Research Institute of Geodesy, Topography and Cartography, Zdiby](#)  
2005–7 Research Assistant, [Dept. of Geophysics, Charles University, Faculty of Mathematics and Physics](#)  
2003–2005 Harris Post-doctoral Scholar at [Dept. of Geophysics, Texas A&M University](#)  
1998–2003 Postgraduate study of geophysics at Charles University  
1993–1998 Study of physics at Charles University

### Research stays and schools

2006–7 Dept. of Physics, University of Athens a National Observatory of Athens (2 × 10 days)  
May 2002 Dept. of Geology and Geophysics, Texas A&M University, College Station (5 weeks)  
August 2001 Summer school of Geology, Roztěž (1 week)

### Teaching activities

20010– Geomagnetism and geoelectricity II (lecture, Charles University)  
2008–10 Geophysical Fluid Dynamics (lecture, ETH Zürich)  
2006–7 Geomagnetism and geoelectricity II (lecture, Charles University)  
2002, 2005–7 Programming for physicists (exercises, Charles University)

### Grants and projects

2007–8 European Space Agency, 20944/07/NL/JA: Mapping 3-D mantle conductivity from Swarm constellation data, *team member*  
2006–8 Grant Agency of the Czech Republic, 205/06/0557: EM Induction and distribution of electrical conductivity in the Earth: global, continental, and regional 3-D heterogeneous models, *team member*

- 2006–7 Ministry of Education of the Czech Republic, KONTAKT 7-2006-1 (Czech Rep. — Greece): Study of Electrical Conductivity in the Earth's Crust and Mantle Using Satellite-borne Geomagnetic Data, *team member*
- 2005–9 Ministry of Education of the Czech Republic, LC 506: Recent Earth Dynamics, *team member*
- 2005–7 Ministry of Education of the Czech Republic, 1K05003: Conductivity structure in the lithosphere and the Earth's mantle inferred from the satellite geomagnetic data, *key person*
- 2003–5 Grant Agency of the Czech Republic, 205/03/1001: Deep geoelectrical model of a 3-D inhomogeneous Earth, specifically of Europe, from analysing the geomagnetic variations and theory of elmag. induction. *team member*

### Students under supervision

- 2008 Martina Ulvrová, Equilibration between sinking metal droplets and molten silicates in magma oceans, [MSc. thesis](#).
- 2008 Martin Čochner, Controlled source electromagnetic induction: solution of forward problem in cylindrical coordinates (in Slovak), [Bc. thesis](#).
- 2008 Radim Kusák, Overview of Geophysics: Geomagnetism and geoelectricity (introductory class text, in Czech), [Bc. thesis](#).

### Language skills

- Czech native speaker
- English fluent
- French good
- German mediocre
- Russian mediocre
- Latin passive

### Memberships

- 2007– [Grant Agency of the Academy of Sciences of the Czech Rep.](#), *member of Department Council 3*
- 2001– American Geophysical Union, *member*

### Reviewed papers

1. Velímský, J., 2010. Electrical conductivity in the lower mantle: Constraints from CHAMP satellite data by time-domain EM induction modelling. *Phys. Earth Planet. Int.*, **180(3-4)**, doi: 10.1016/j.pepi.2010.02.007, [PDF](#).
2. Martinec, Z., J. Velímský, 2009. The adjoint sensitivity method of global electromagnetic induction for CHAMP magnetic data. *Geophys. J. Int.*, **179**, 1372–1396. [PDF](#).
3. Hanyk L., D.A. Yuen, C. Matyska, and J. Velímský, 2007. Visualization of time-dependent dynamics of postglacial rebound, *Visual Geosciences*, **12**. [PDF](#).
4. Velímský, J., Z. Martinec, and M.E. Everett, 2006. Electrical conductivity in the Earth's mantle inferred from CHAMP satellite measurements - I. Data processing and 1-D inversion. *Geophys. J. Int.* **166**, 529–542. [PDF \(788 kB\)](#)

5. Velínský, J. and Z. Martinec, 2005. Time-domain, spherical harmonic-finite element approach to transient three-dimensional geomagnetic induction in a spherical heterogeneous Earth. *Geophys. J. Int.*, **160**(1), 81–101. [PDF \(556 kB\)](#)
6. Velínský, J. and M.E. Everett, 2004. Electromagnetic Induction by Sq Ionospheric Currents in a Heterogeneous Earth: Modeling Using Ground-based and Satellite Measurements. *In: Reigber C., H. Lühr, P. Schwintzer, and J. Wickert (Eds.), Earth Observation with CHAMP. Results from Three Years in Orbit.* Springer-Verlag, 2005, pp. 341–346. [PDF \(276 kB\)](#)
7. Velínský J., Z. Martinec a M.E. Everett, 2004. Elektromagnetická indukce v Zemi: pohled z oběžné dráhy, *Čs. časopis pro fyziku*, **4/2004**, 209-213, (in Czech, English title: Electromagnetic induction in the Earth: A view from the satellite orbit). [PDF \(1.2 MB\)](#)
8. Martinec, Z, M.E. Everett and J. Velínský, 2003. Time-domain, spectral finite-element approach to transient 2-D geomagnetic induction in a spherical heterogeneous Earth. *Geophys. J. Int.*, **155**, 33–43.
9. Velínský J., M.E. Everett and Z. Martinec, 2003. The transient Dst electromagnetic induction signal at satellite altitudes for a realistic 3-D electrical conductivity in the crust and mantle, *Geoph. Res. Let.* **30**(7), 1355–9. [PDF \(1.2 MB\)](#)
10. Velínský J. and C. Matyska, 2000. The influence of adiabatic heating/cooling on magnetohydrodynamic systems, *Phys. Earth Planet. Inter.*, **117**, 197–207. [PDF \(594 kB\)](#)

## Theses

1. Velínský, J., Electromagnetic induction in a heterogeneous Earth's mantle: Time-domain modelling. Charles University, Praha. Ph.D. thesis, supervisor: Zdeněk Martinec. [PDF \(2.8 MB\)](#)
2. Velínský J., 1998. Numerical simulations of the magnetohydrodynamic system. Charles University, Praha. diploma thesis, supervisor: Ctirad Matyska. [Gzipped PostScript \(1.7 MB\)](#)