



July 2015

1 – PERSONAL INFORMATION

1.1 – Name: THELMA KRUG

1.2 – Function: Senior Researcher

Head of the International Affairs Office at the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais)
São José dos Campos, São Paulo, Brazil

1.3 – Date and Place of Birth: 20 March 1951, São Paulo, Brazil

2 – CONTACT INFORMATION

Instituto Nacional de Pesquisas Espaciais
Av. dos Astronautas 1758 – Jardim da Granja
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3 – ACADEMIC AND PROFESSIONAL BACKGROUND

3.1 – BsC in Sciences

Field: Mathematics
Roosevelt University
Chicago, Illinois, USA
Graduation Date: 12 September 1975

3.2 – Master in Sciences

Field: Probability and Statistics
Roosevelt University
Chicago, Illinois, USA
Graduation Date: 03 January 1977

3.3 – Doctor in Philosophy

Field: Spatial Statistics
The University of Sheffield
Department of Probability and Statistics
Sheffield, United Kingdom
Graduation Date: 20 March 1992
Thesis title: Statistical Approaches to the Estimation of Missing Values Arising in Remotely Sensed Data, 350 p, v. I e II
Supervisor: Dr. Richard J. Martin

3.4 – Revalidation and Registration of the PhD Diploma in Brazil

Technological Institute of Aeronautics (Instituto Tecnológico de Aeronáutica)

Date: 12 June 2000

Diploma registered under number 08192, book 004, page 387

4 – ACADEMIC ACTIVITIES

Courses at Post-graduate level

- At the National Institute for Space Research:
 - Master and PhD levels in Remote Sensing and Meteorology

- Others:
 - Fundação Valeparaibana de Ensino (University of Vale do Paraíba)
 - University of Taubaté (State of São Paulo)
 - University of Itajubá, Economics (State of Minas Gerais)
 - Institute Technological of Aeronautics (ITA)

Statistics applied to Meteorology, Probability and Statistics, Operational Research, Probability and Statistics Applied to Remote Sensing, Economic Planning, Multivariate Analysis of Remotely Sensed Data, Integral and Differential Calculus.

5. OTHER PROFESSIONAL ACTIVITIES

- National Secretary at the Secretary of Climate Change and Environmental Quality, Ministry of the Environment, Brasilia
- Deputy National Secretary at the Secretary of Policies and Programs in Science and Technology. Ministry of Science and Technology, Brasilia.
- Co-chair of the Task Force on National Greenhouse Gas Inventories of the Intergovernmental Panel on Climate Change – IPCC. Elected in 2002. Reelected in 2009.
- General Director of the Engineering School (Electronics and Civil Engineering) at the Fundação Valeparaibana de Ensino (today University of Vale do Paraíba)
- Head of the Remote Sensing Division at the National Institute for Space Research, INPE
- General Coordinator of Earth Observation National Institute for Space Research, INPE
- Visiting researcher at the Inter-American Institute for Global Change Research
- National Coordinator of the Latin American Society for Remote Sensing and Geographic Information Systems (SELPER)
- Coordinator of the Training and Education Component of the Large Scale Biosphere–Atmosphere Experiment in Amazonia (LBA)
- Member of the Scientific Committee of the Project LUCC (Land Use/Cover Change) of the International Geosphere–Biosphere Program – IGBP and IHDP (International Human Dimensions Program)
- Coordinator of the Focal 2 – LUCC program. International Geosphere–Biosphere Program – IGBP and IHDP (International Human Dimensions Program)

- Coordinator of the Tropical Forests Data Sub-Program, from the International Union of Forestry Research Organizations (IUFRO)
- Member of the Editorial Advisory Board of the ISPRS Journal of Photogrammetry and Remote Sensing
- Manager of the Institutional Amazonia Program, National Institute for Space Research
- Member of the Editorial Advisory Board of the GIS Geo-Information-Systems
- Head of the International Cooperation Office at the National Institute for Space Research
- Adviser to the Brazilian delegation to the UNFCCC on issues related to Land use, land-use change and forestry (LULUCF) for the last 13 years
- Member of the Technical Advisory Group for REDD+, Mexico
- Member of the Board of Trustees, CIFOR, Indonesia

6. ACTIVITIES RELATED TO CLIMATE CHANGE

Co-chair of the Task Force on National Greenhouse Gas Inventories (TFI) of the Intergovernmental Panel on Climate Change (IPCC). April 2002 until present.

Main products elaborated under the Task Force:

- Good Practice Guidance on Land use, Land-Use Change and Forestry (GPG – LULUCF) of the IPCC. Adopted by the IPCC Panel on November 2003.
- Report on forest degradation and devegetation of other vegetation types, adopted by the IPCC in November 2003.
- IPCC Guidelines 2006 for National GHG Inventories (IPCC 2006): Energy; Industrial Processes; Agriculture, Forest and Other Land Use; Waste. Adopted by the Panel in 2006.
- 2013 Revised Supplementary Methods and Good Practice Guidance arising from the Kyoto Protocol. Adopted by the Panel in 2013.
- 2013 Supplementary Guidance for the 2006 Guidelines on National GHG Inventories: Wetlands. Adopted by the Panel in 2013.

Other activities:

- Contributing Author in Chapter 2 of the 2013 Revised Supplementary Methods and Good Practice Guidance arising from the Kyoto Protocol
- Member of the Advisory Committee of the publication The Economics of Climate Change in Brazil: costs and opportunities.

7. MEETINGS AS IPCC CO-CHAIR

More than 80 meetings chaired by the co-chairs of the Task Force on National Greenhouse Gas Inventories (Taka Hiraishi and Thelma Krug).

8. SOME PUBLICATIONS RELATED TO CLIMATE CHANGE

Birdsey, R.; ...; **Krug, T.**; ...; Yamagata, Y. Afforestation, Reforestation and Deforestation Activities. In: IPCC Special Report on Land Use, Land-Use Change and

Forestry. Ed. Watson, R.T.; Noble, I.R.; Bolin, B.; Ravindranath, N.H.; Verardo, D.J.; Dokken, D.J. Cambridge University Press, USA. 2000.

Moran, E.; **Krug, T.** Predicting location and magnitude of land use and land–use change. *Global Change Newsletter* 45:4–8, 2001.

Krug, T. et al. Chapter 4 of the Good Practice Guidance on Land Use, Land–Use Change and Forestry. Intergovernmental Panel on Climate Change (IPCC). 2003.

Krug, T.; Rivera–Lombardi, R.J.; Santos, J.R. Burned area, recurrence of fire and permanence of burnt scars in selected areas of the Brazilian Cerrado using TM–Landsat imagery. In: International Society for Photogrammetry and Remote Sensing Congress, 20. Istanbul, Turkey, 12–23 July, 2004. Archives. Edited by M.O.Altan. Vol. XXXV, Part B. p.243–246 (ISSN 1682–1777).

Krug, T.; Santos, J.R. Inventory: forest change. In: Encyclopedia of Forest Sciences. Ed. Burley, J.; Evans. J.; Youngquist, J.A. Elsevier, Academic Press, London. Vol. 3., p. 989–997 (ISBN 0–12–145160–7). Published in February 2004.

Krug, T.; Karsten, S. CDM rules for forest project activities. *Arborvitae* 25. May 2004.

Krug, T. The role of afforestation and reforestation in the Clean Development Mechanism in the fixation of atmospheric CO₂. In: *Fixação de Carbono: atualidades, projetos e pesquisas*. Ed. Sanquetta, C.R.; Balbinot, R.; Ziliotto, M.A. Curitiba, Brasil, 2004.

Krug, T. Contribution of the IPCC to the inventory of GHGs related to LULUCF. In: *Fixação de Carbono: atualidades, projetos e pesquisas*. Ed. Sanquetta, C.R.; Balbinot, R.; Ziliotto, M.A. Curitiba, Brasil, 2004.

Krug T., Vulnerability, impacts and adaptation to climate change. *Forests*. Part II. *Cadernos NAE* ((Nucleo of Strategic Matters of the Presidency), número 3, 2005.

Krug, T. Business opportunities in national productive sectors. *Forests*. Part III B. *Cadernos NAE* (Nucleo of Strategic Matters of the Presidency), número 4, 2005.

Krug, T. Modalities and Procedures for afforestation and reforestation Project activities under the CDM: A Synthesis. 25 pp.

Krug, T. 2012. Producing a National GHG Inventory for the Land Use, Land–use Change, and Forestry Sector: Case Study from Brazil.” Available online at: <https://sites.google.com/site/maptpartnerresearch/national-ghginventory-case-study-series/producing-a-national-ghg-inventory-for-the-landuse-land-use-change-and-forestry-lulucf-sector>.

Author in Chapter 4 of the GPG–LULUCF on Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol.

Author in Chapter 2 of the IPCC 2006 for AFOLU (Volume 4, Part I).

Author in Chapter 4 of the IPCC 2006 for AFOLU (Volume 4, Part I).

9. REVIEWS OF NATIONAL COMMUNICATIONS, NATIONAL INVENTORIES, BIENNIAL REPORTS AND BIENNIAL UPDATE REPORTS

National Communication : Sweden (2002); Poland (2009); Japan (2011)

In country review of the annual greenhouse gas inventory submission of Spain (2003); Poland (2005); Japan, 2006; Lithuania (2011); Latvia (2013).

Desk review of the annual greenhouse gas inventory submission of Czech Republic, Romania, Canada, Spain (2004);

Centralized review of the annual greenhouse gas inventory submission of Austria, Ireland, Japan, Slovenia (2007); Slovenia, Estonia, Greece, United Kingdom (2010); Hungary, Japan, Malta and New Zealand (2012); Poland, France, Monaco and Czech Republic (2014).

Technical evaluation of the reference emission level or reference level for forest management:

Romania, Polonia, França, Eslovaquia, Hungria, Eslovenia, 2011.

Technical review of the 6th National Communication and the First Biennial Report of the United States. Washington, 24 February to 1st March, 2015.

Technical analysis of the First Biennial Update Report: Chile, Peru and Macedonia, Bonn, Germany, 2015.

Technical assessment of the Forest Reference Emission Level for REDD+ for Mexico.

10 – AWARDS

Honor to merit Franklin Honor Society (USA), BsC in Mathenmatics.

Títle of Knight granted by the Ordem do Mérito Cartográfico by the Brazilian Society of Cartography. May 1996.

Award Austrich Mission granted by the Directorate of the Geographical Service. Department of the Army. April 1999.

Medal (High Distinction) – Legião do Mérito from the Brazilian Academy of Military Engineering. February 2002.