

Christian Brünner · Georg Königsberger
Hannes Mayer · Anita Rinner *Editors*

Satellite- Based Earth Observation

Trends and Challenges for Economy and
Society



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Part V
Paneldiscussion on Natural Hazards
and Earth Observation

An Introduction



Thomas Neger

1 Introduction

In the course of the objective symposium several speakers approached the utilization of space technology for peaceful/civil purposes. In this context natural hazard and disaster management are important fields of application.

To give an example: In Austria municipalities are competent authorities for local land-use planning. In the past, natural hazards such as floods have often been neglected in this context. Several regions designated building plots in flood-prone areas, i. a. because mayoral salary depends on the amount of main residences registered in the particular municipality. This practice led to significant material and personal damage in case of disaster, e.g. during floods in Austria in the early years of this millennium.

Meanwhile Earth observation is an important tool for natural hazard and disaster management. Some examples:

- Earth observation data support the implementation of danger zone plans to demarcate flooding ranges.
- The European “Copernicus system” records floods to create maps which give assistance to (disaster) relief forces (“emergency mapping”). Especially floods present a particular challenge to satellite-based Earth observation because the areas concerned are frequently hidden by clouds which make it impossible to photograph the surface in the visible-light spectrum. So radar satellites transmit signals through this cloud layers and receive an “echo”. This echo can be converted into images to facilitate the management of disasters. Moreover large conflagrations can be recorded by infrared imagery. With this technology

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satellites assist in the timely identification of fire sources and provide firemen with up-to-date emergency maps.

- Vulcan researchers have employed interferometry methods to observe the rising and sinking of Mount Etna on the island of Sicily ever since 1992. This improves their understanding of what is happening in the interior of the volcano as well as their chances and the accuracy of predicting future eruptions.

2 Panelists

- Moderator: Mag. Dr. Thomas Neger, attorney, Neger/Ulm attorneys-at-law
- Introduction statement: ao. Univ.-Prof. Dr. Wolfgang Sulzer, Department of Geography and Regional Science, University of Graz
- Ao. Univ.-Prof. Mag. Dr. Irmgard Marboe, University of Vienna
- Dr. Norbert Frischauf, Austrian Space Forum
- Mag. Martin Mössler, M.Sc., Science Park Graz
- Univ.-Prof. Dr. Gottfried Kirchengast, Wegener Center for Climate and Global Change, University of Graz

3 Discussion Topics

Matter of discussion was the application of Earth observation for natural hazards management. The discussants agreed, that utilization of satellite-based Earth observation plays a prominent role in prevention as well as in overcoming natural hazards like floods, earthquakes, tsunamis etc. Especially satellite images are used to perform control and remedying of damage. As an example the heavy earthquake in Naples was alleged. Hereafter satellite images made an essential contribution documenting the scale of devastation and to guide the disaster relief forces. Finally the discussion revolved around the question, how these services could be improved in the future.

Literature and Internet Sources

http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Overview3 (12.12.2017)

<http://www.elfproject.eu/content/emergency-mapping> (12.12.2017)

http://www.dlr.de/rd/desktopdefault.aspx/tabid-4808/7972_read-37422/ (12.12.2017)

Thomas Neger studied Law at Karl-Franzens-University of Graz, Austria. He works as attorney in Graz primarily specializing in business law with particular focus on environmental law. Previously Thomas Neger i.a. was associated with a well-known law firm in Vienna. He also was employed as Assistant at the Institute for Austrian, European and Comparative Public Law, Political Science and Administrative Studies at the University of Graz, where he taught space law and policy together with Professor Brünner. He has written numerous publications and is constantly lecturing on public business law issues.