



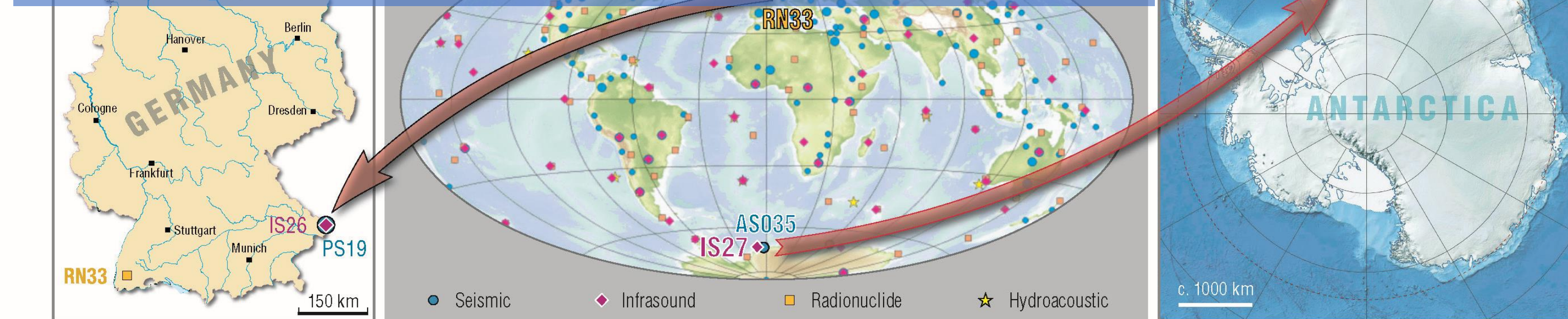
Christoph Pilger, Lars Ceranna, Christian Bönnemann, J. Ole Ross, BGR – Federal Institute for Geosciences and Natural Resources, Hannover (German NDC); ole.ross@bgr.de

## CTBT Overview and the Role of Germany in the Verification Regime

Chapter 1:  
Nuclear explosion monitoring history and organizational CTBT implementation in Germany



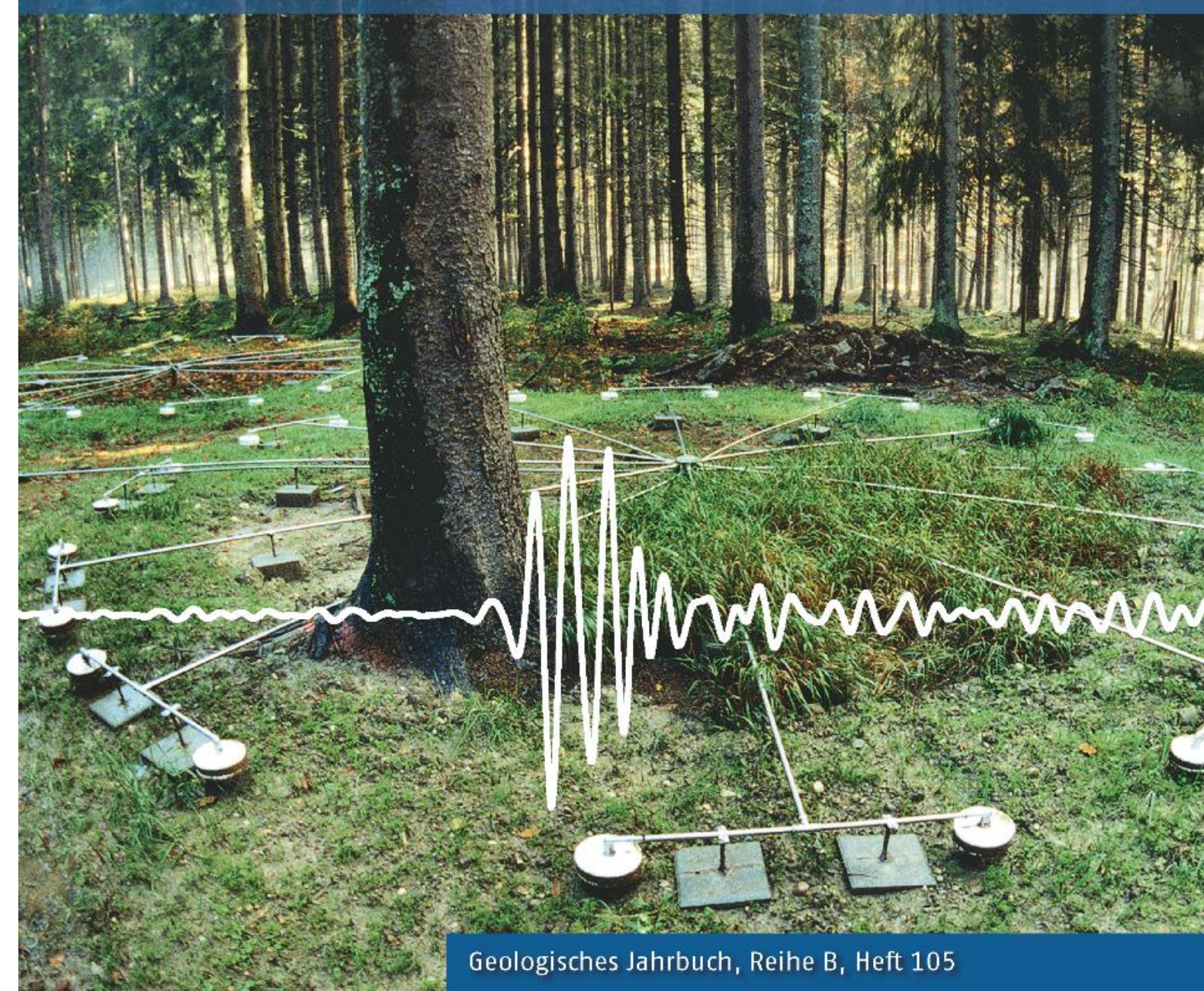
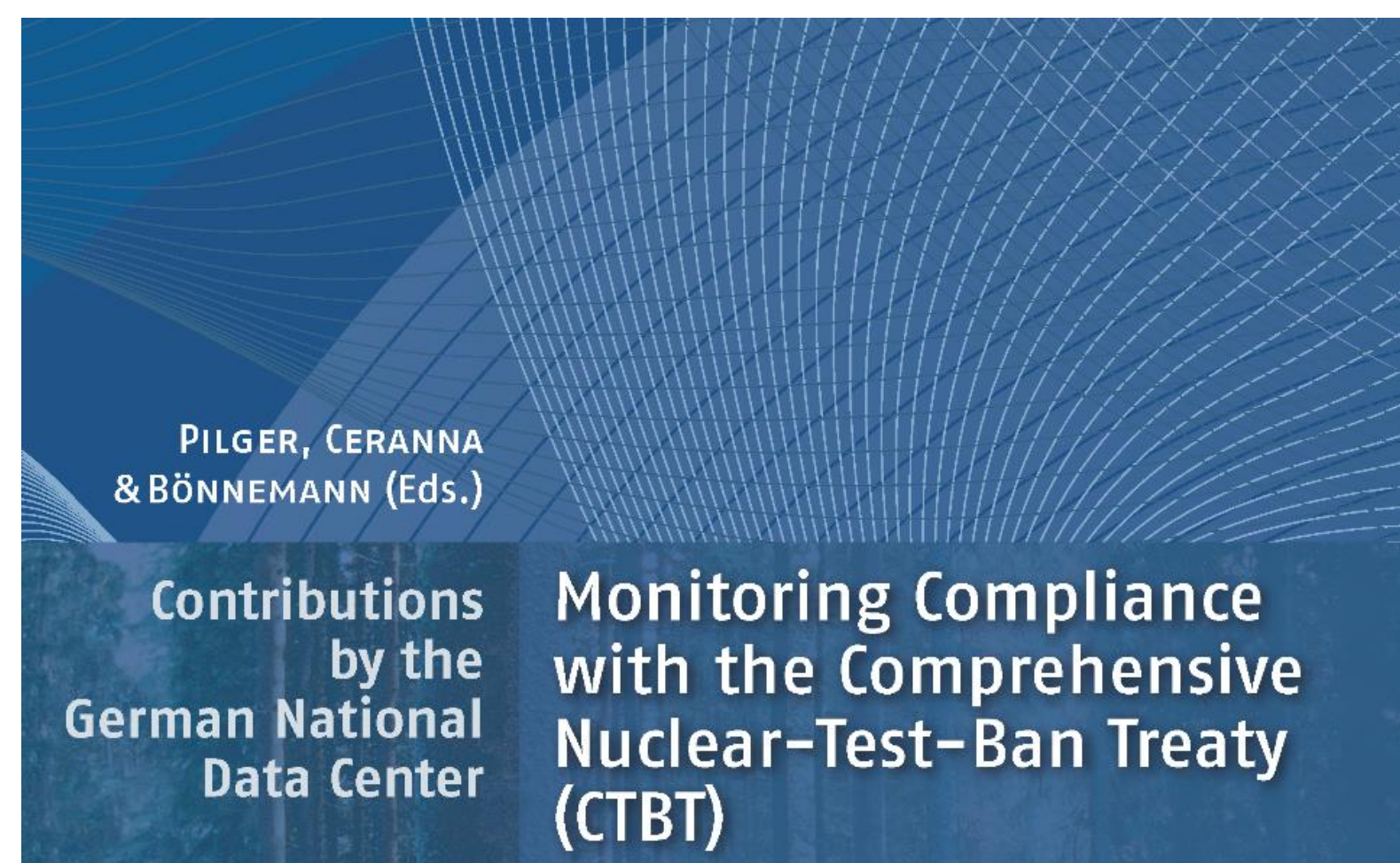
## Chapter 2: German Contributions to the International Monitoring System



## Monitoring Compliance with the CTBT

... is a book authored by scientists at the German National Data Center together with experts from other institutions.

It is designed for the interested public and policy makers but may be also of interest for other experts in the CTBT community.



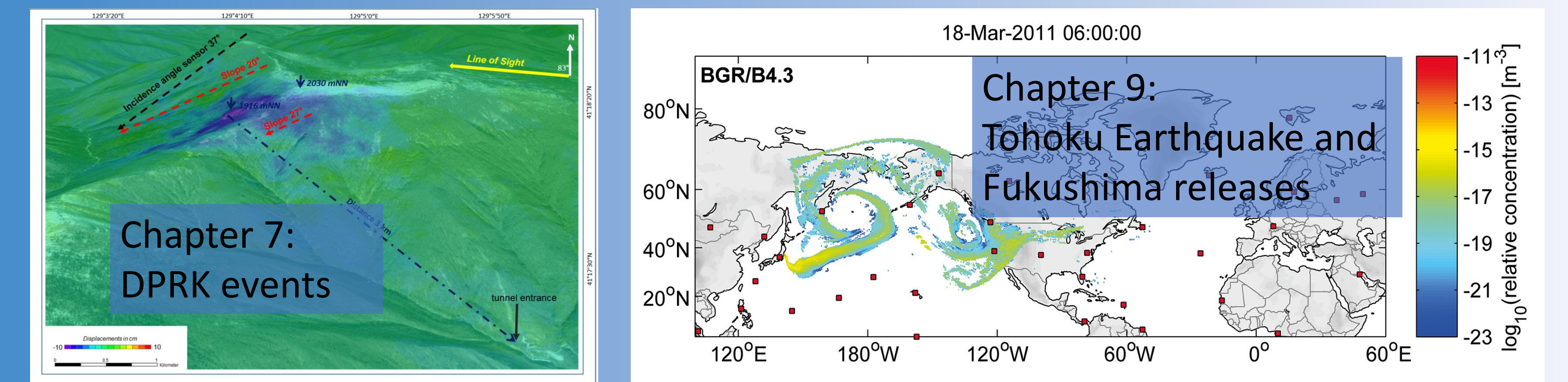
328 pp., 217 figs., 19 Tables  
ISBN 978-3-510-96858-9  
Schweizerbart 2017



The book was finished just before the 2017 DPRK nuclear explosion. Results of German NDC and collaborators on that particular event can be found in:

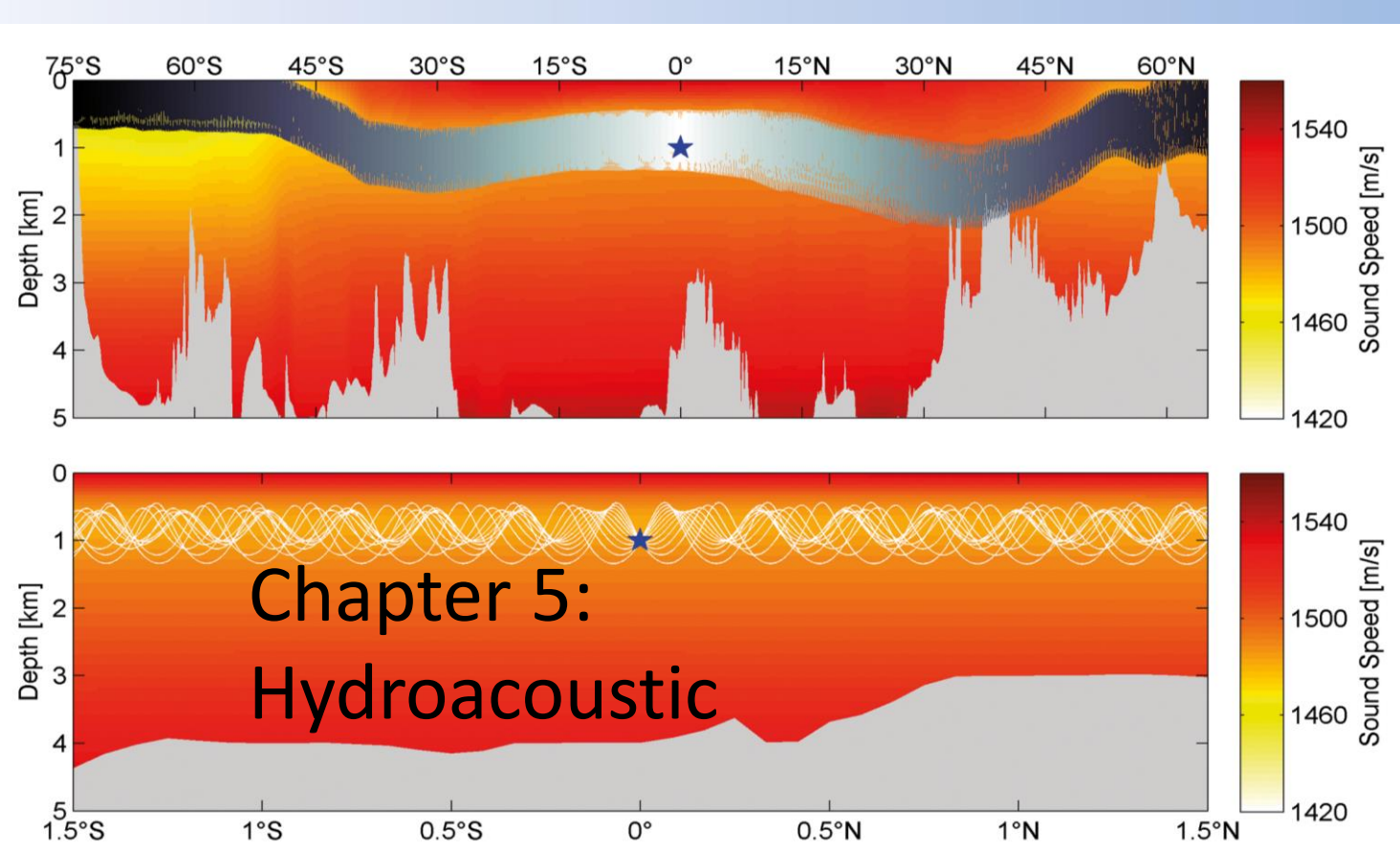
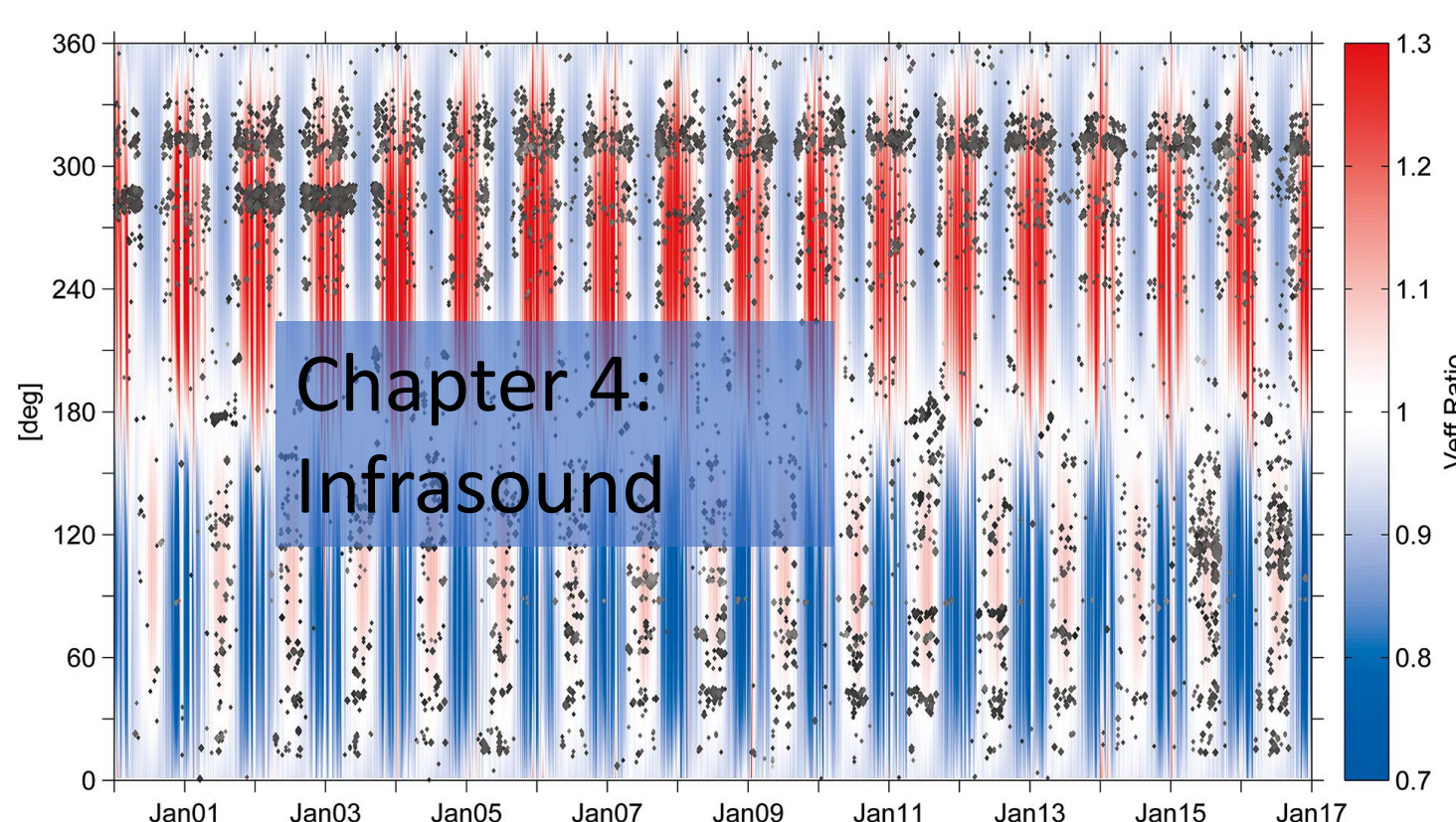
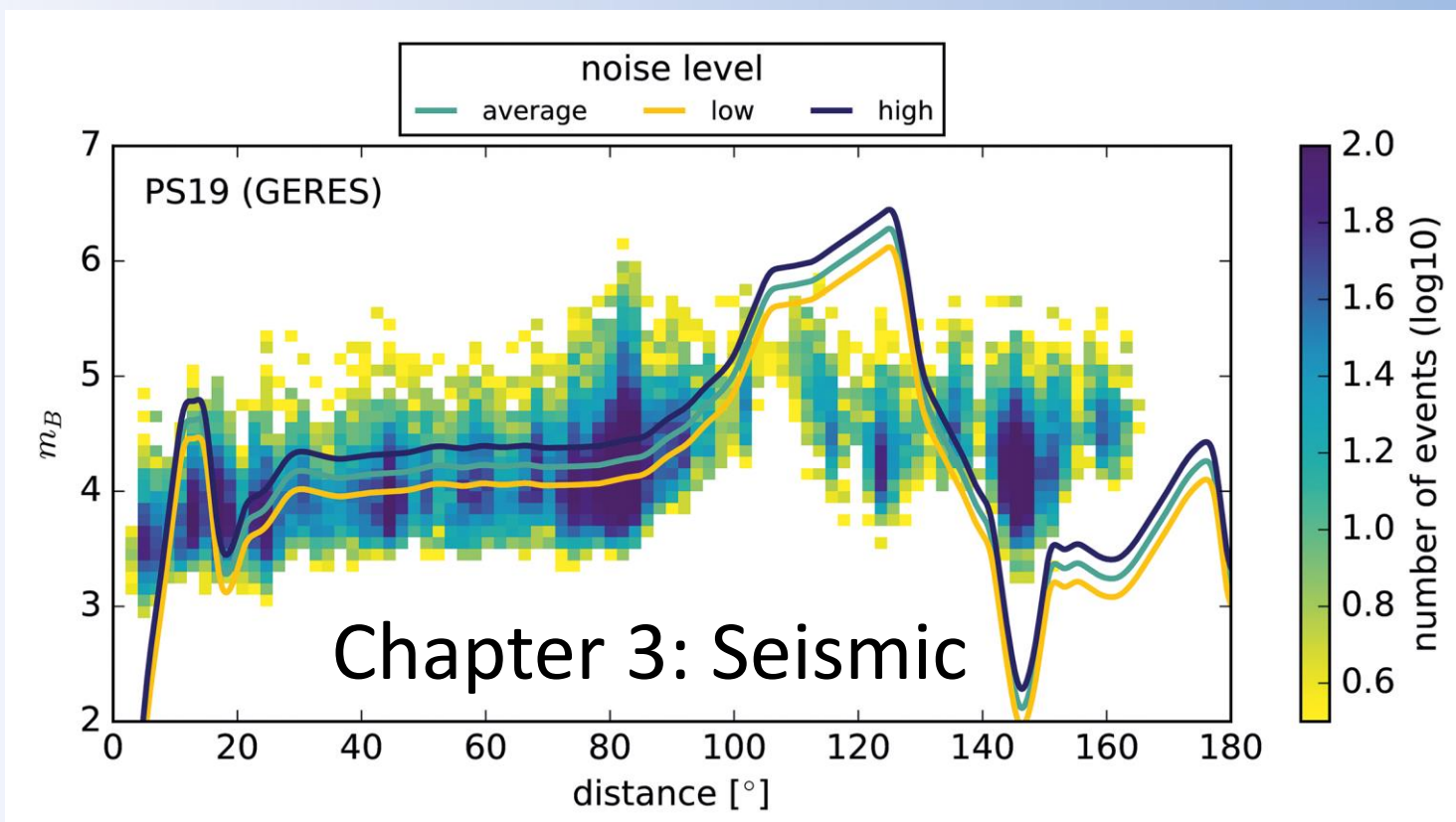
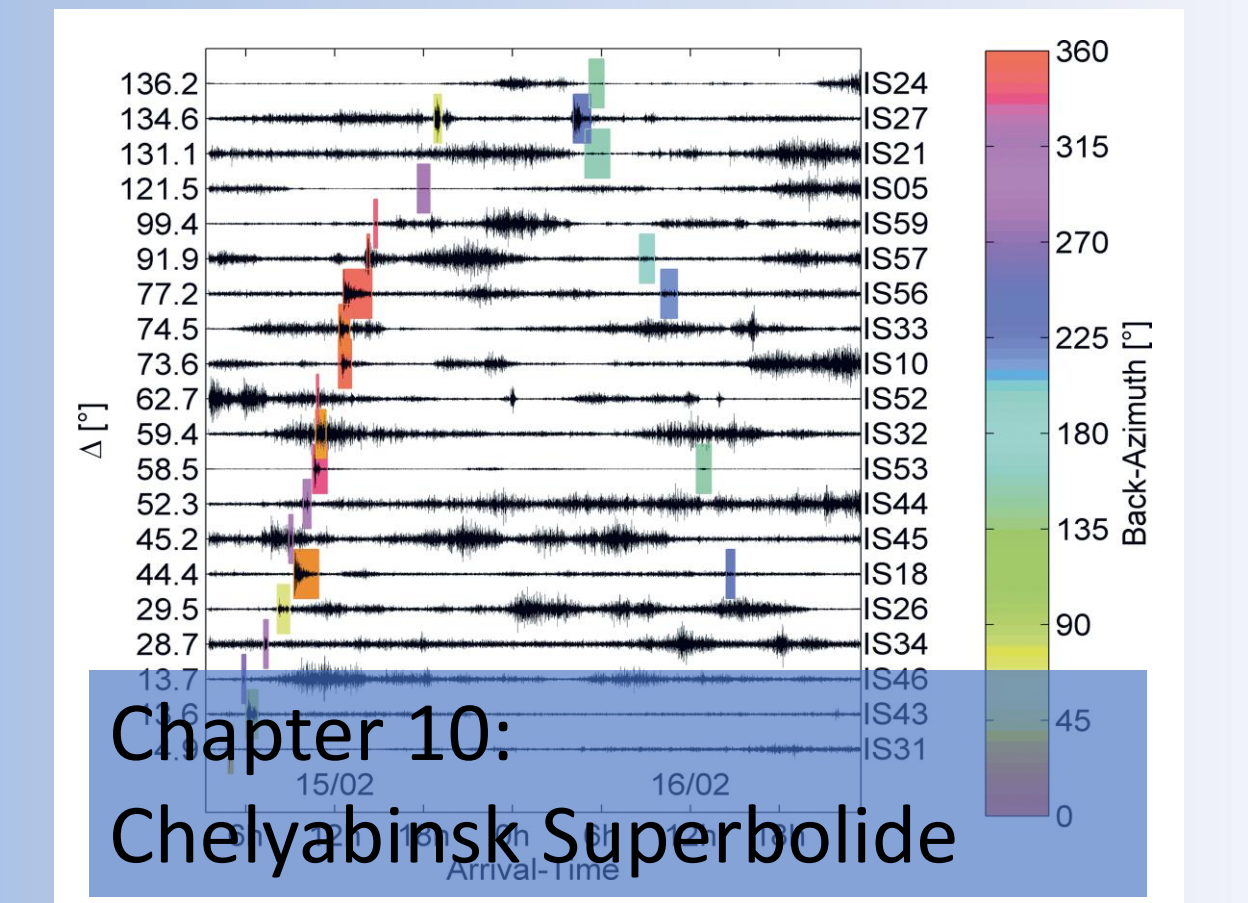
“A multi-technology analysis of the 2017 North Korean nuclear test”  
by Gaebler et al. (2019) in the EGU journal Solid Earth.  
<https://www.solid-earth.net/10/59/2019/>  
Here at SnT in: T2.1-O6, T2.1-P24, T2.1-P27, T2.3-P3, T2.4-P13

## Test Cases for the International Monitoring System

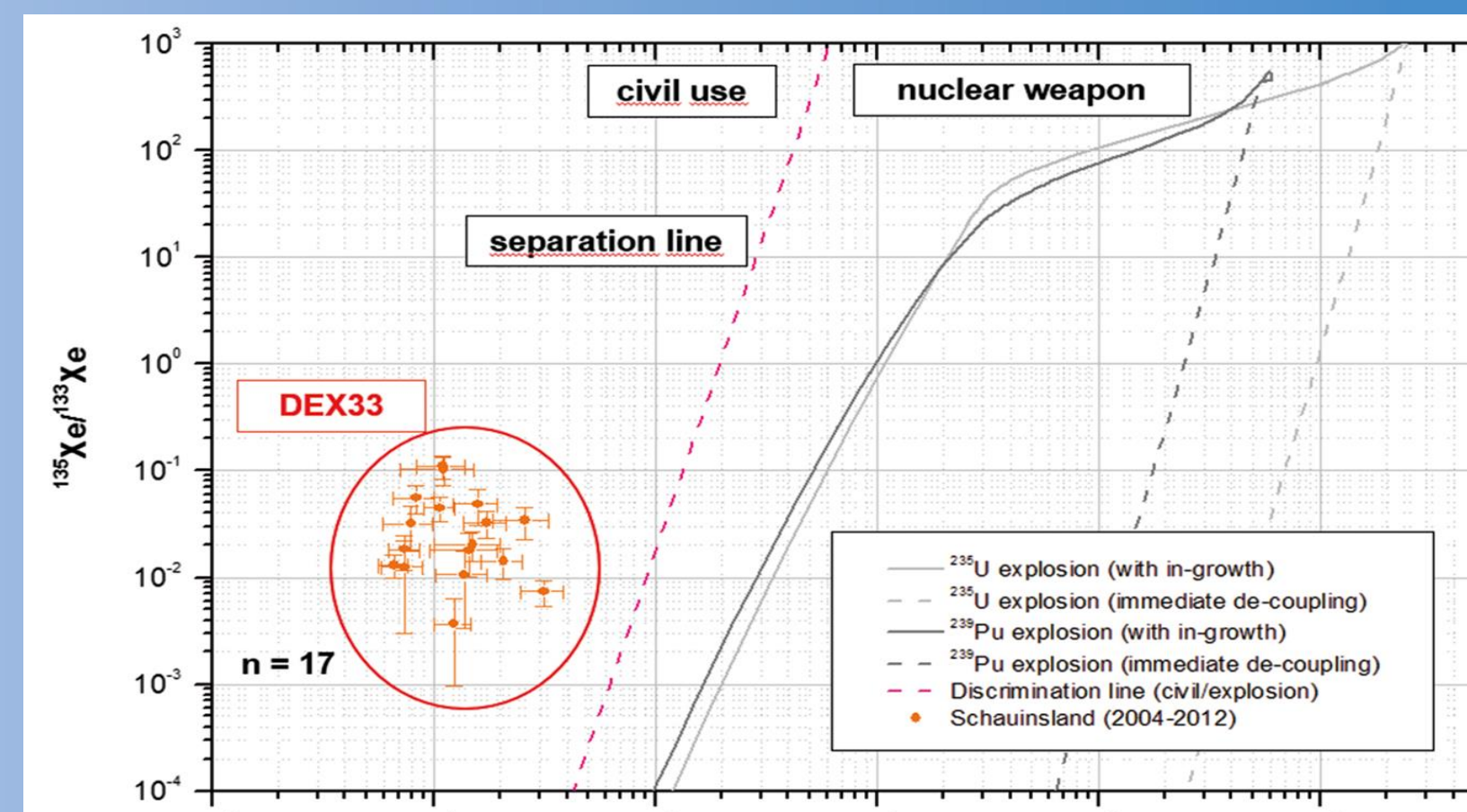


	NPE 2007	NPE 2008	NPE 2009	NPE 2010	NPE 2012	NPE 2013
Location	Zagros Mountain (Western Iran)	Chile	Kazakhstan	Wyoming (USA)	SW Siberia (Russia)	(Central Europe)
Type of waveform event	Earthquake	Earthquake	Blast (Kara-Zhyra Mine)	Blast (Black Thunder Coal Mine)	DoubleBlast (Mezhdurechensk)	Earthquake in gas field
Type of fictitious radionuclide source		1 PBq arbitrary tracer released over 24 hours at	Arbitrary hypothetical RN release with waveform event	Nuclear explosion, noble gas seepage over	Nuclear explosion, immediate venting of	Unrelated power-reactor release
Technologies	S waveforms	S waveforms; WMO exercise	SI waveforms; ATM; WMO exercise	SI waveforms; RN/ATM; WMO exercise	SI waveforms; RN/ATM; WMO exercise	S waveforms; RN/ATM

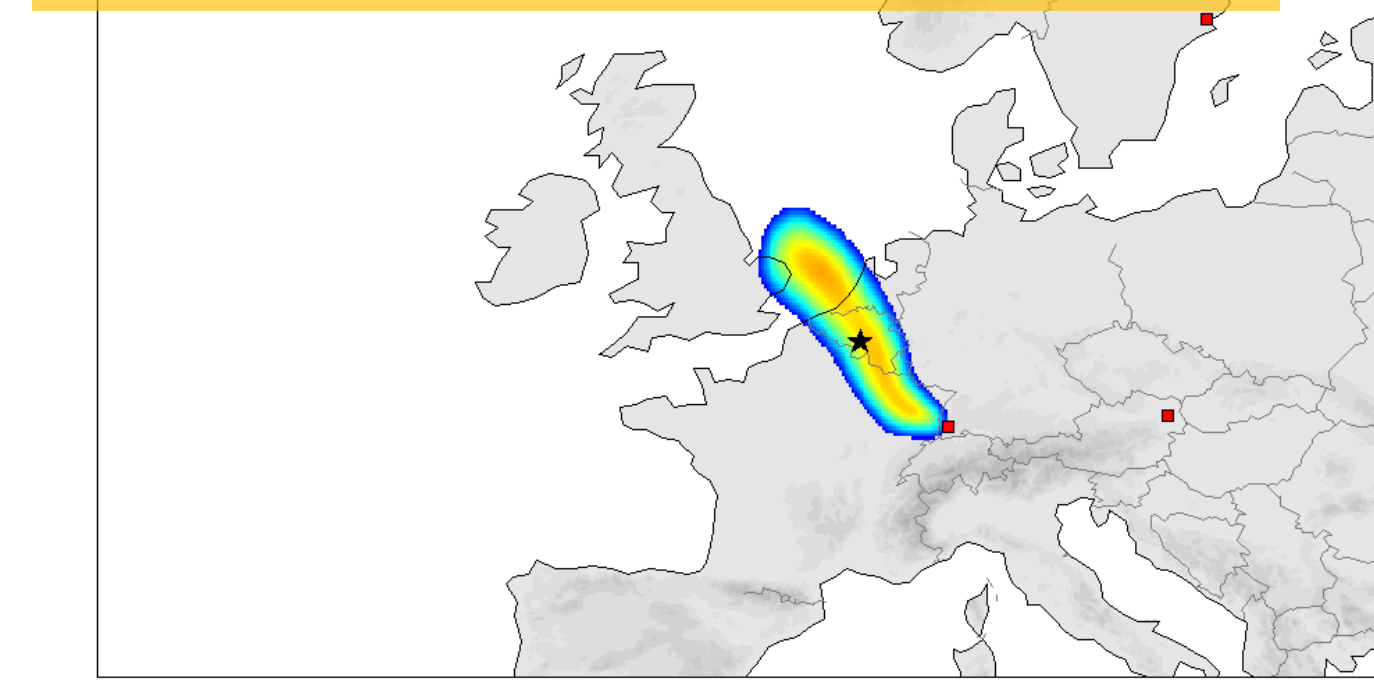
## Chapter 8: NDC Preparedness Exercises



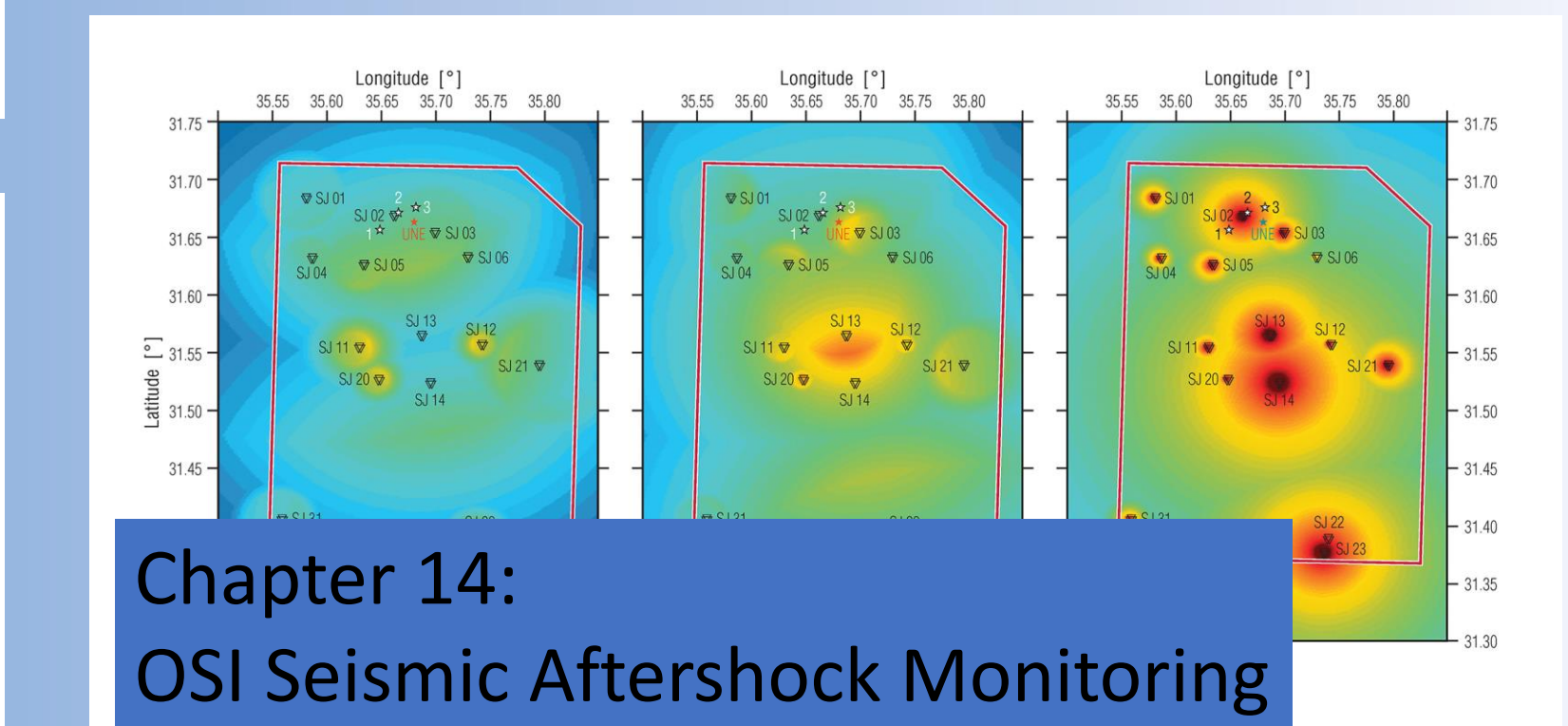
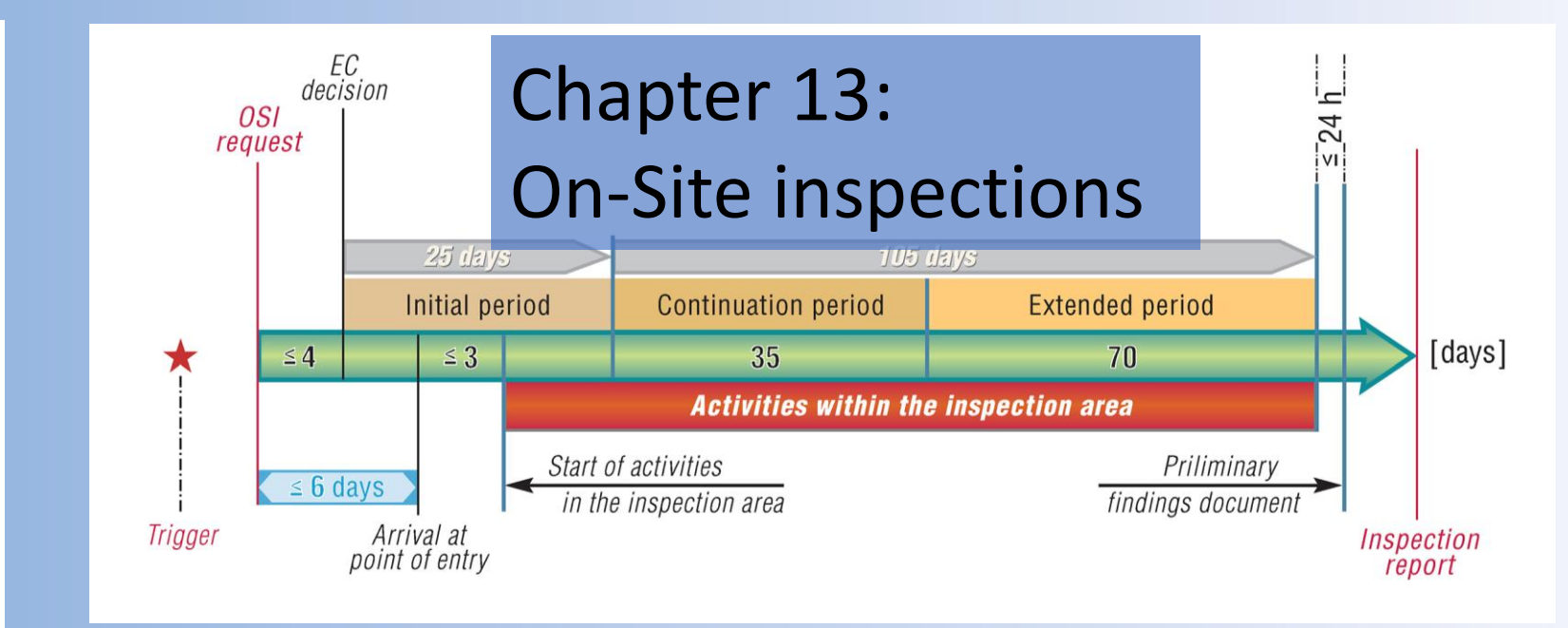
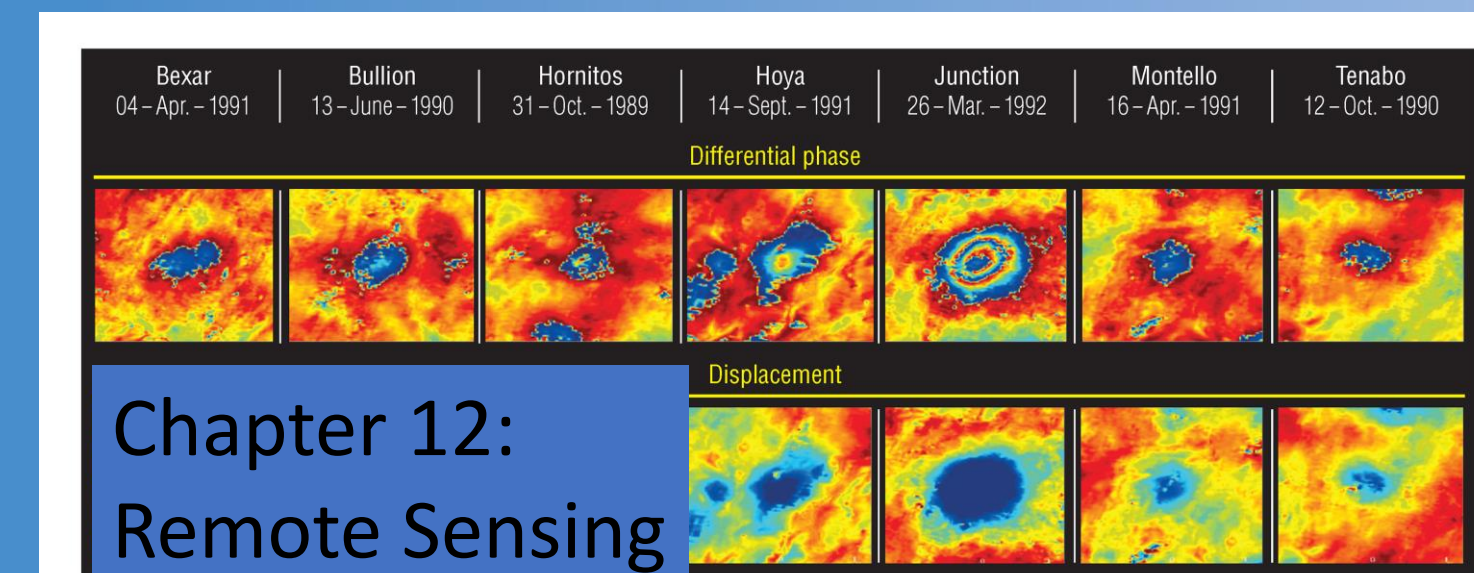
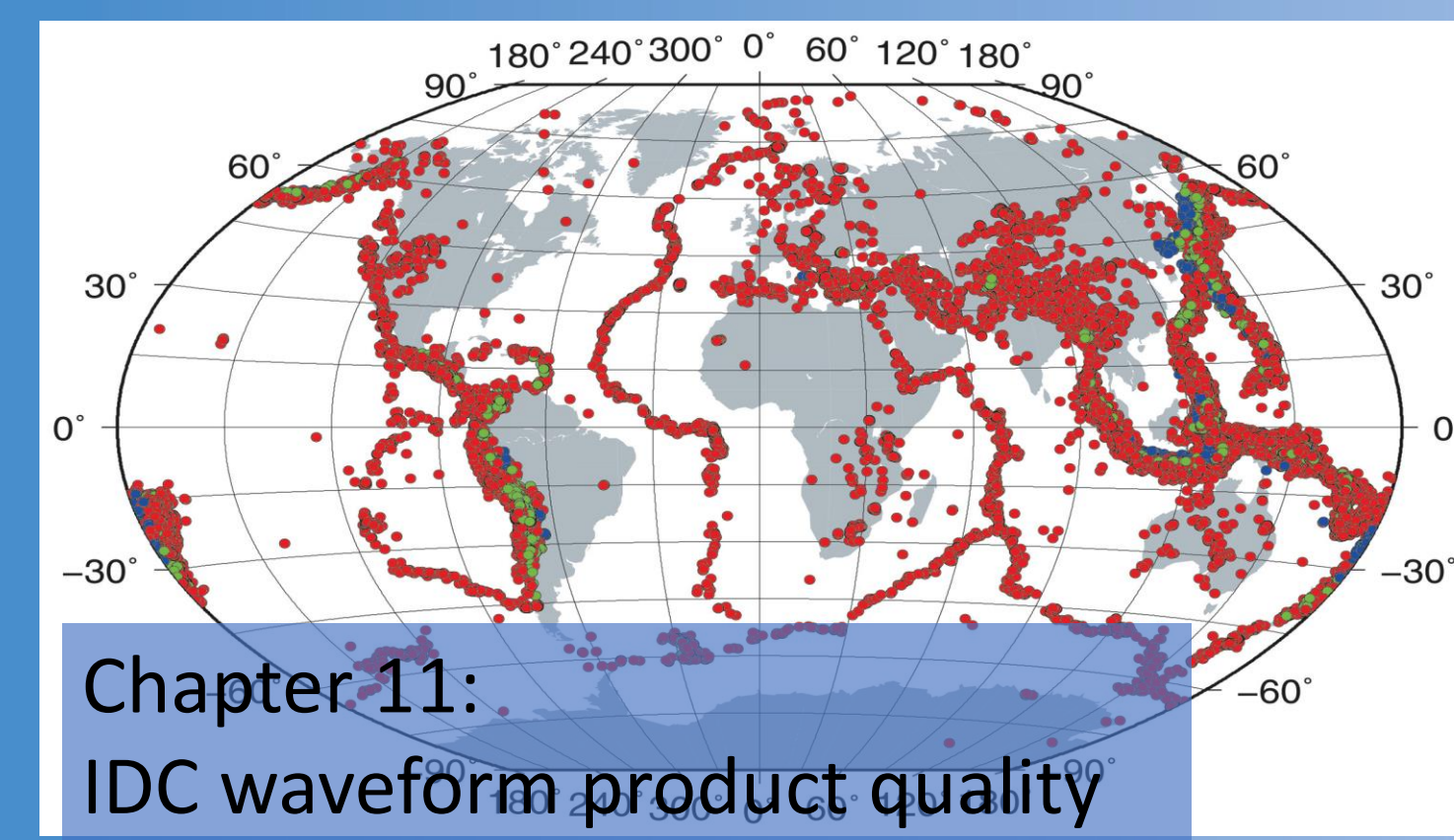
## Overview over CTBT Monitoring Technologies and Networks



## Chapter 6: Radionuclides/ Atmospheric Transport Modelling



## International Data Center, National Technical Means and On-Site Inspection



## Chapter 14: OSI Seismic Aftershock Monitoring

