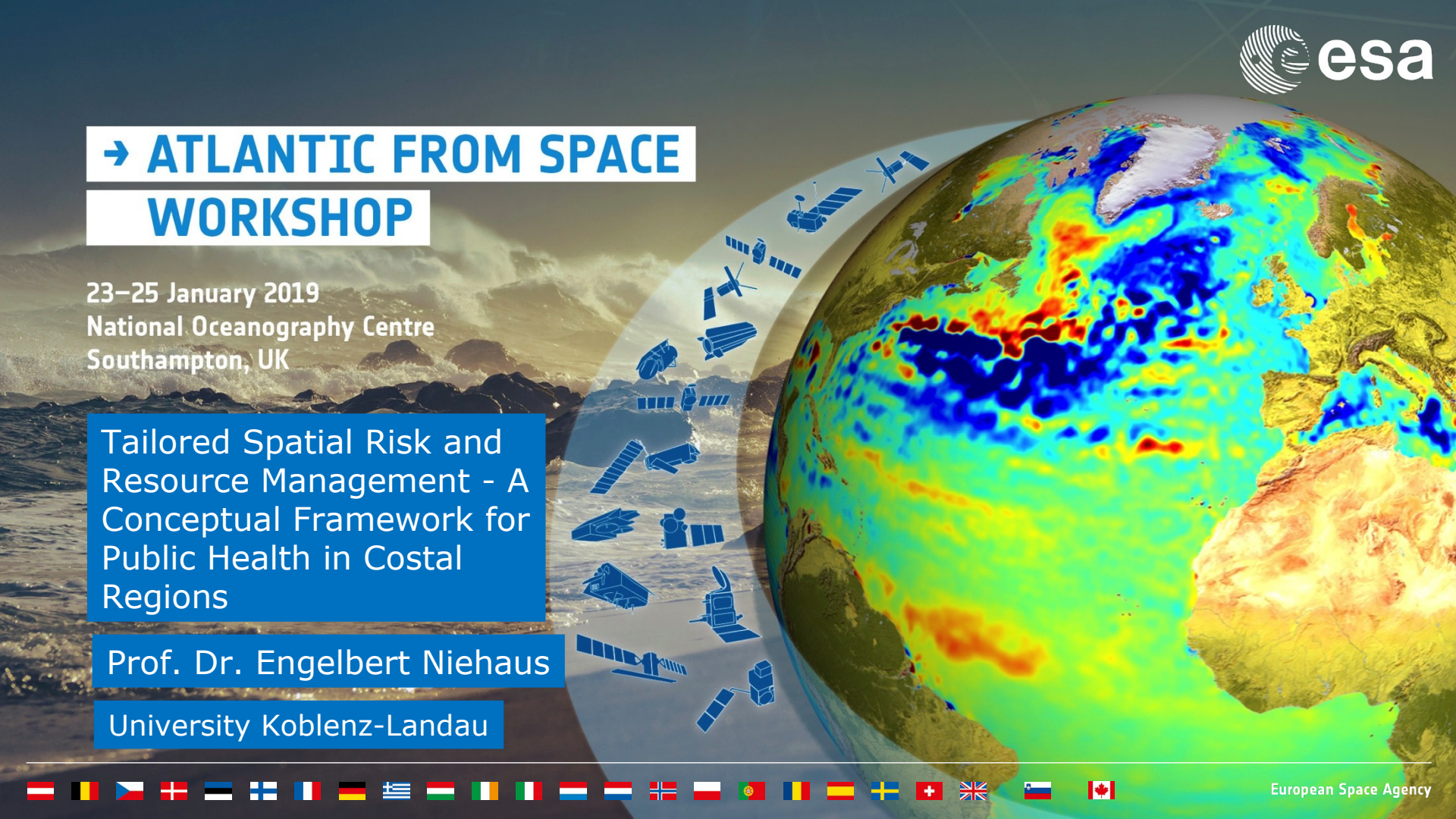
→ ATLANTIC FROM SPACE WORKSHOP

23–25 January 2019
National Oceanography Centre
Southampton, UK

Tailored Spatial Risk and Resource Management - A Conceptual Framework for Public Health in Costal Regions

Prof. Dr. Engelbert Niehaus

University Koblenz-Landau



Introduction

University Koblenz-Landau
Prof. Dr. Engelbert Niehaus

Expert Focus Group –
Space & Global Health
Scientific and Technical Subcommittee

Mobile Computing
Mobile Devices as
Decision Support Clients

Mathematical Modelling
Spatial Decision Support
& Risk Resource

https://niehausbert.gitlab.io/audioslides4web/southampton2019

One Health

One Health

Environmental Health
Animal Health

+

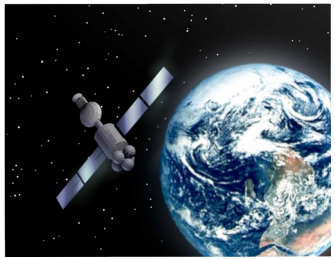
Public Health

Mitigate Risk / reduce number of people exposed to One Health Risks

Environmental Health has an impact on Public Health

Reach People – One Health Impact

Space



One Health

"Bridge" from Space to (One) Health Impact

Harmful Algae Bloom

Red Tide (Harmful Algae Bloom – HAB)

- caused by algae, *"Karenia brevis"*
- needs major nutrient source
- in costal region
- wind and current aggregates algae

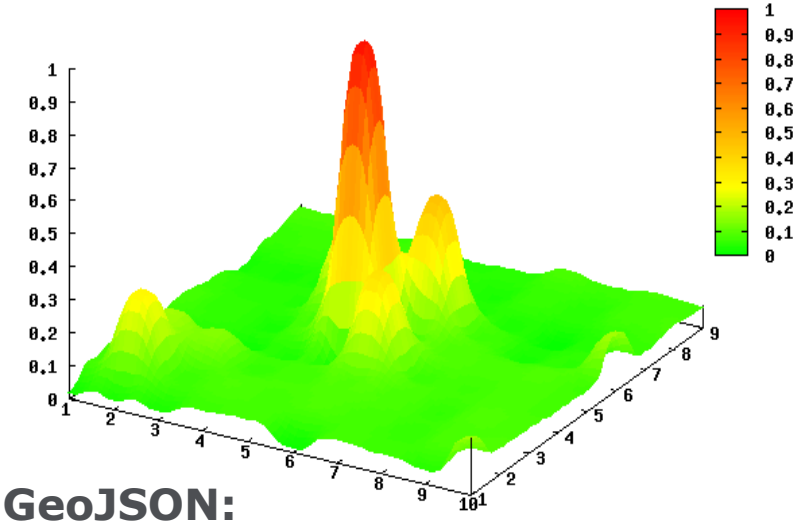
One Health Risk

> respiratory irritation (airbourne toxin)
> skin irritation (exposure)
> make shellfish poissonous
> kills fish, dophins, …

Source: https://commons.wikimedia.org/wiki/File:Mar%C3%A9_vermelha.JPG
License: GNU Free Documentation Licesnse **Description:** Red Tide
Author (WikiMedia Commons): objetivo **Date:** 10 December 2007 (upload)

Algal Bloom – Remote Sensing

Decision Support Layer in GIS



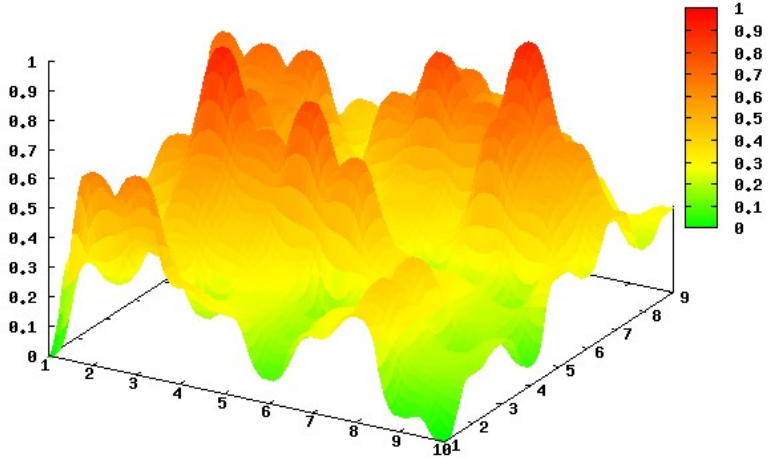
GeoJSON:

Assign values to points in a grid

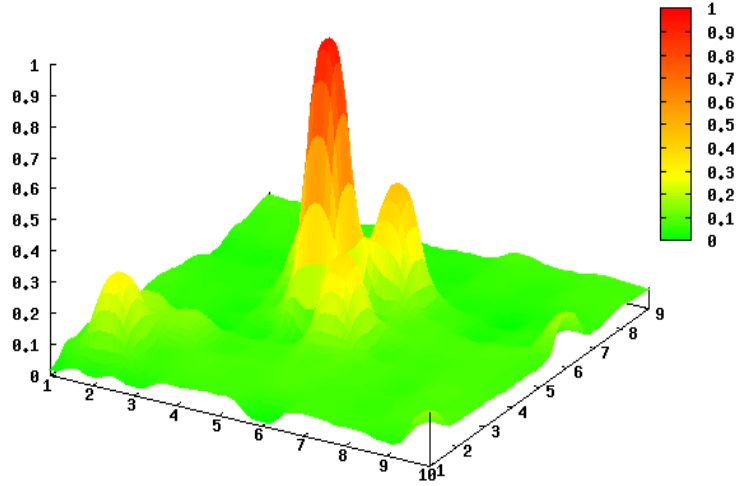
Source: https://de.wikipedia.org/wiki/Algenbl%C3%BCte#/media/File:Algal_bloom_20040615.jpg
Description: MODIS Rapid Response Team, NASA/GSFC - Sensor: Aqua/MODI
Author: Jacques Descloitres **Date:** June 15, 2004

Spatial Fuzzy Logic

Environmental Conditions – represented with Spatial Fuzzy Logic



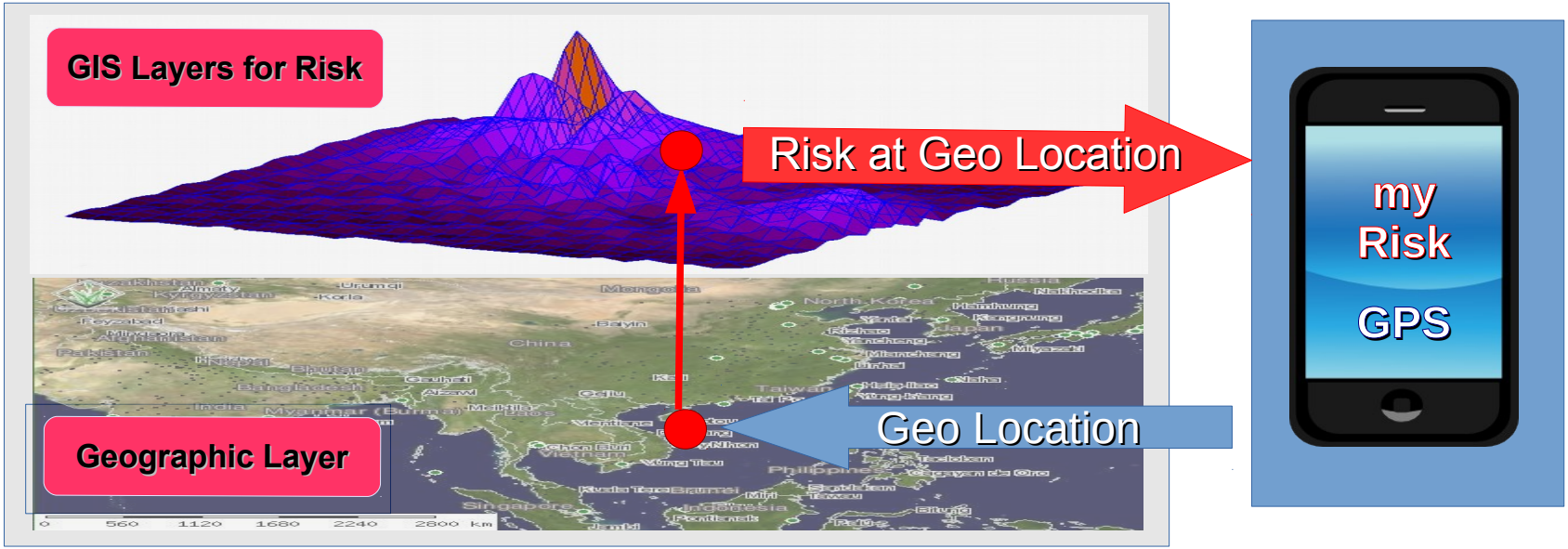
Major Nutrient Source
Requirement for rapid growth of Red Tide



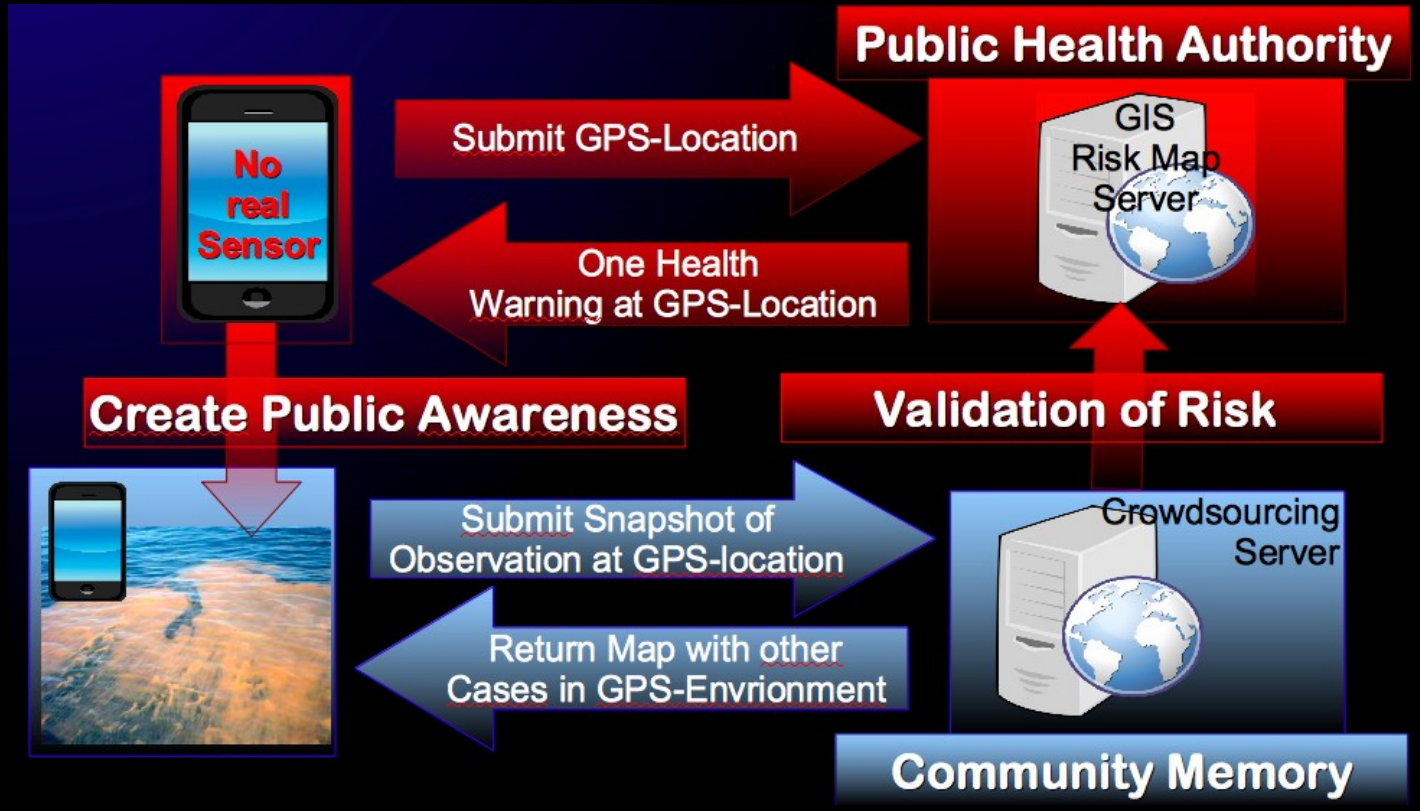
Aggregation of Harmful Algae
Wind / current transport algae / particles

Tailored Response for Geolocation

Evaluation of Decision Support Layers with Mobile Devices



Public Awareness, Crowd Sourcing, Public Health

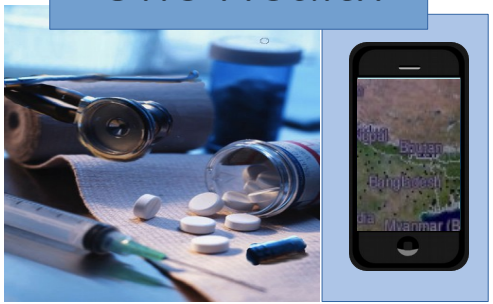


Summary

Space

Licencing: Adaptation of Learning Resources (OER) to Local & Regional Requirements & Constraints.

One Health



"Bridge" from Space to (One) Health Impact

Space Agency

Earth Observ GNSS

GeoJSON One Health Risk Feeds

Mobile Decision Support Client

Risk Literacy OER

Workflow Integration

Last Mile

WHO, Public Health Agencies

Summary

Space Technology & Global Health

- Earth Observation
- Satellite Navigation
- Communication Telemedicine

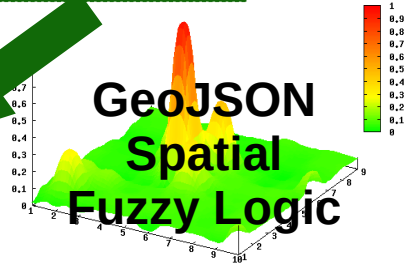
Summary

Allocate Resources according Risk

Risk

Response

Assess Impact of Response on Risk Mitgation



Thank you

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- AudioSlides4Web to create Audio Slides from the LibreOffice-Export
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- **Audacity** recording of audio comment for the slides