1st WMO/WWRP

WEATHER & SOCIETY

CONFERENCE, February 28 - 11 March 2022

WORLD METEOROLOGICAL ORGANIZATION

Warnings for whom? Combining science, education, technology and citizens' knowledge to improve participatory early warning systems

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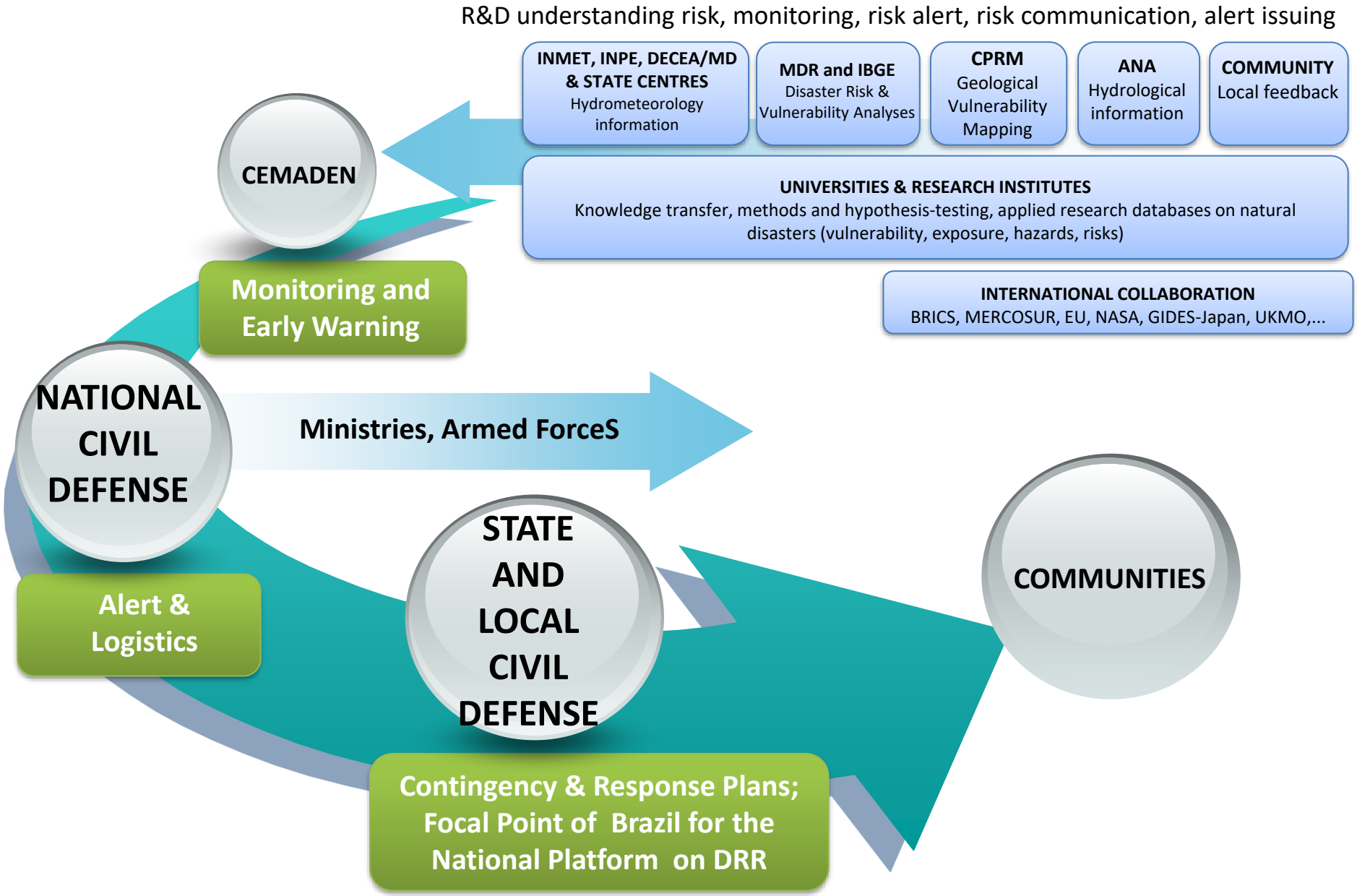
Cemaden
Centro Nacional de Monitoramento e Alertas de Desastres Naturais

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÕES

PÁTRIA AMADA BRASIL GOVERNO FEDERAL

Early Warning System in Brazil (created in 2011)



RISK KNOWLEDGE

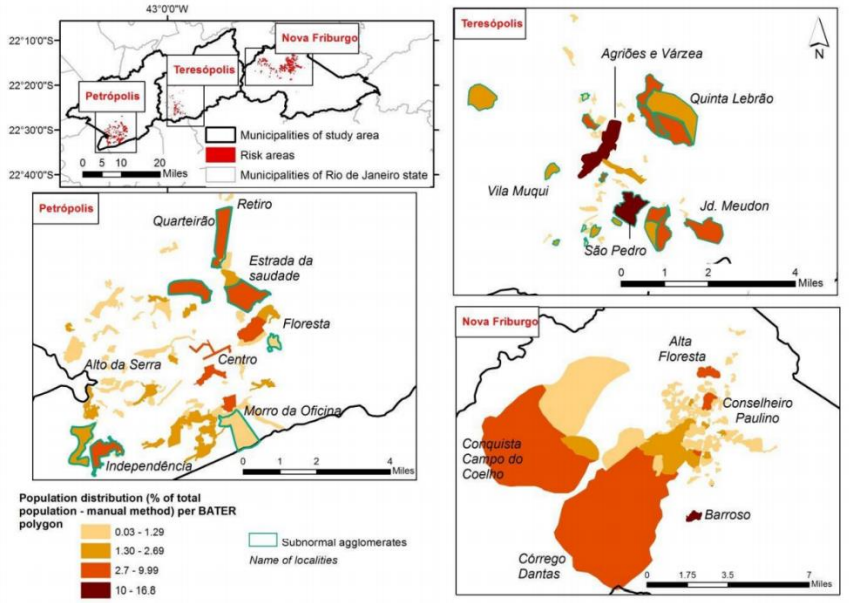


Figure 8: Spatial distribution of exposed population estimated for the cities of Petrópolis, Teresópolis

R. M. Mendes et al.: Understanding shallow landslides in Campos do Jordão municipality – Brazil

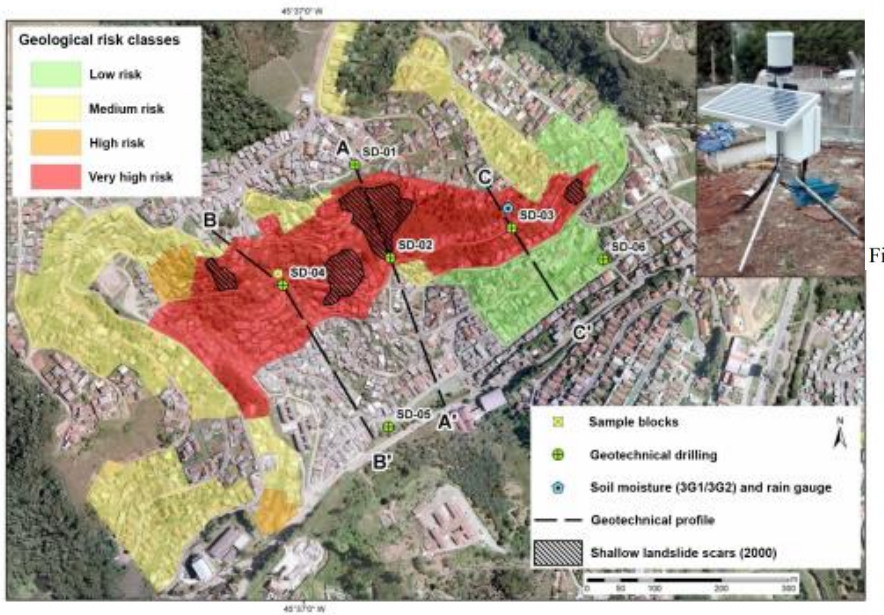
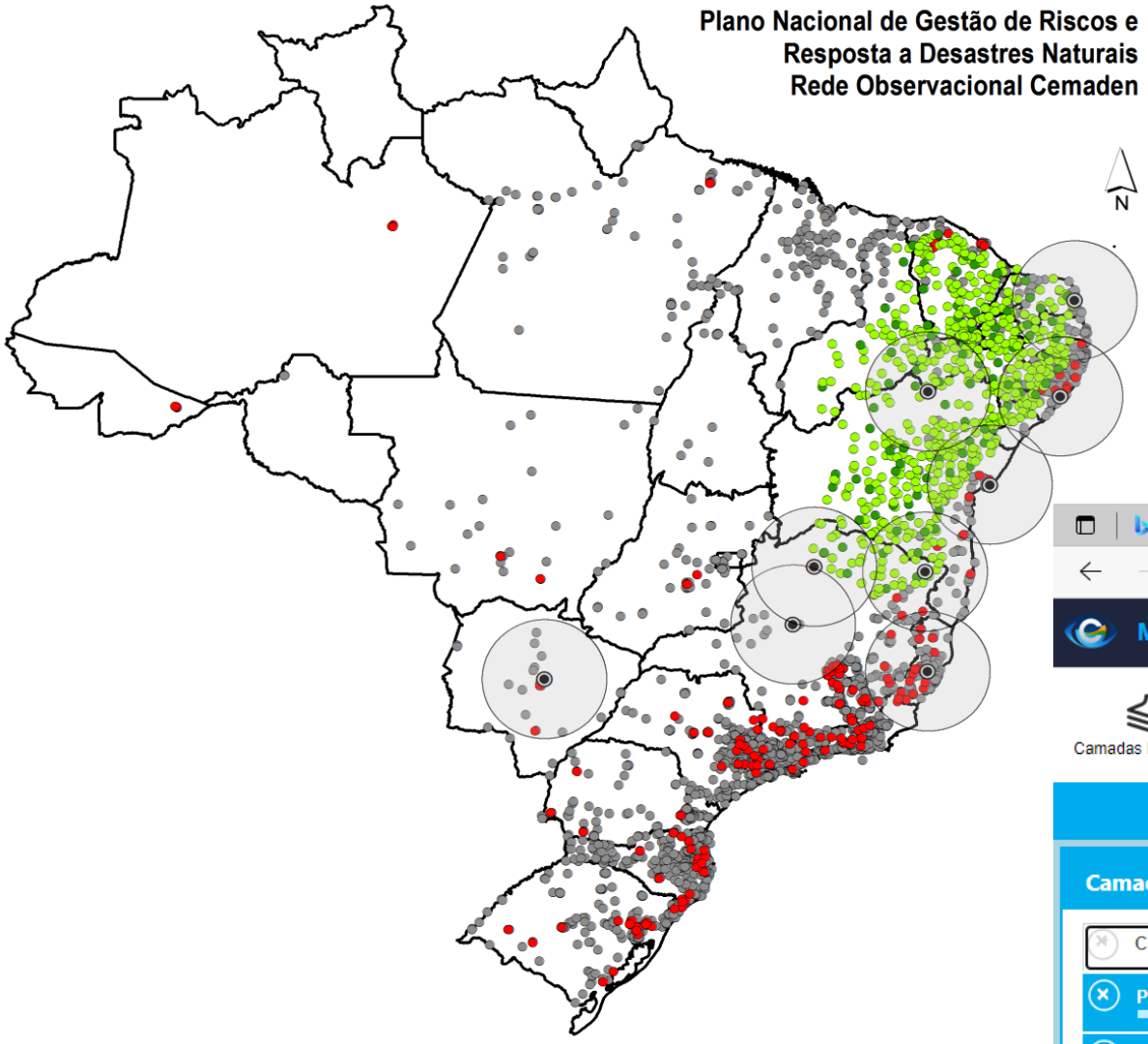
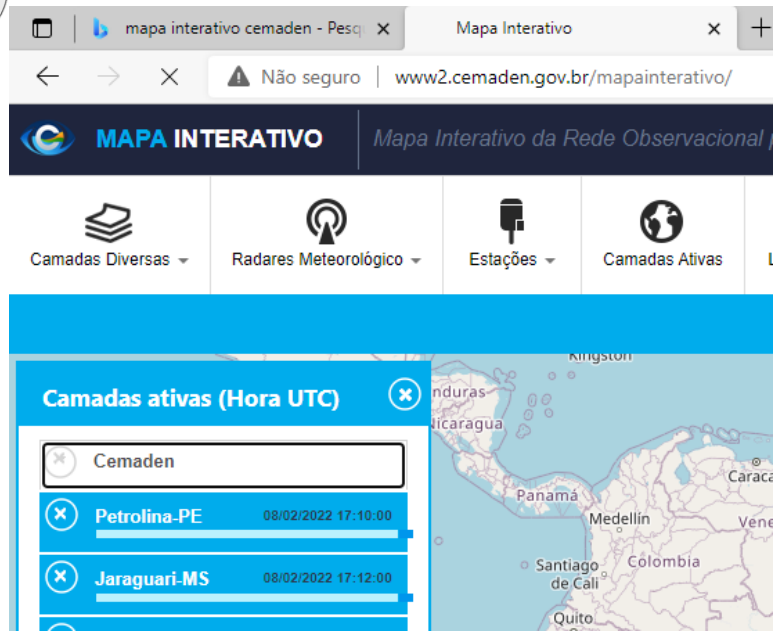


Figure 3. Satellite image of the study site showing the location of monitoring instruments (symbols), geotechnical transects (dotted lines along the slopes), landslide susceptibility areas indicating the level of risk (areas shaded in yellow, orange and red) and scars of previous shallow landslides (black cross-hatched area).

MONITORING



Observational network from CEMADEN: meteorological radars (grey); automatic rain gauges (Black dots), hydrological gauges (red) and agrometeorological stations (green) [Moraes et al 2018]



Data is in the website, but alerts are not

Science with People
(EDUCATION AND COMMUNICATION)

Risk management, Vulnerability and Resilience Strategies

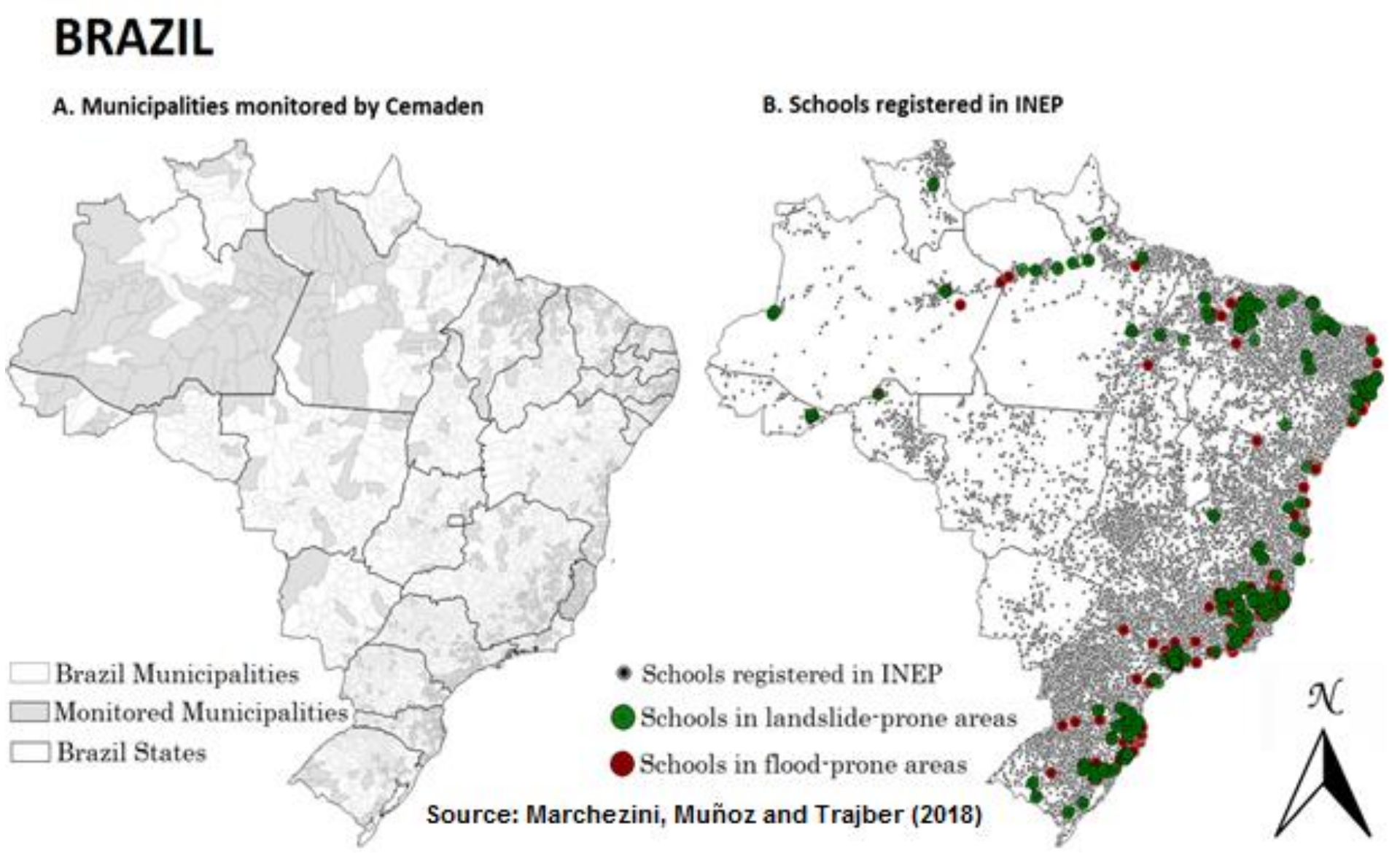
Multi-source database organization for intensive and extensive risk analysis

Organizing technical-scientific events for the continued improvement of our early warning system

Training programs for multiple users of the early warning system.

Scientific methodology to incorporate disaster risk management transversely in Brazilian public policies

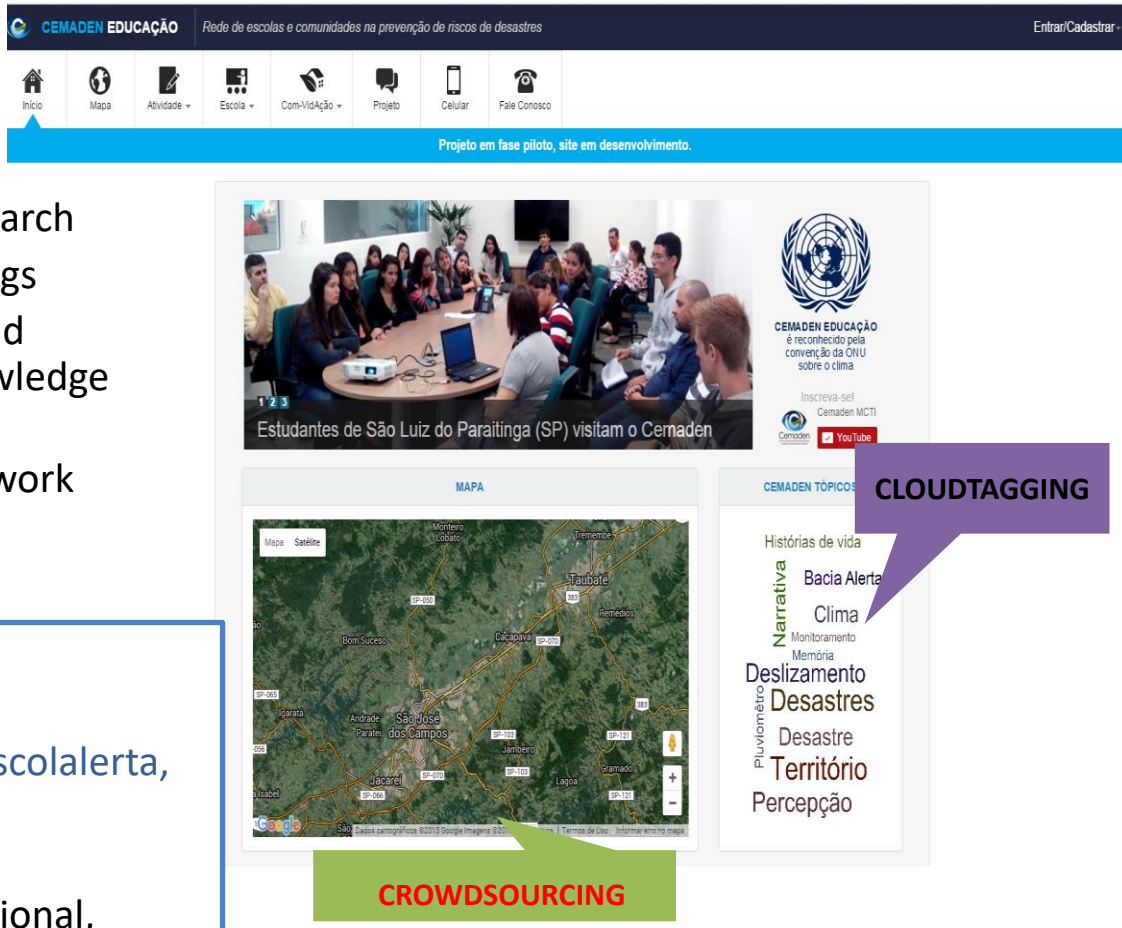
Cemaden Education: network of schools and communities for disaster prevention



Cemaden Education
Network of schools and communities in disaster prevention (2014-…)

Metaphor: *micro-local* Cemaden

- ✓ High-schools (pilot project)
- ✓ Citizen Science - data in support of research
- ✓ Knowledge + monitoring + early warnings
- ✓ Commission for disasters prevention and protection of life (*Com-VidAção*) = Knowledge into action
- ✓ Feedback to Cemaden observation network



Site - Collaborative System

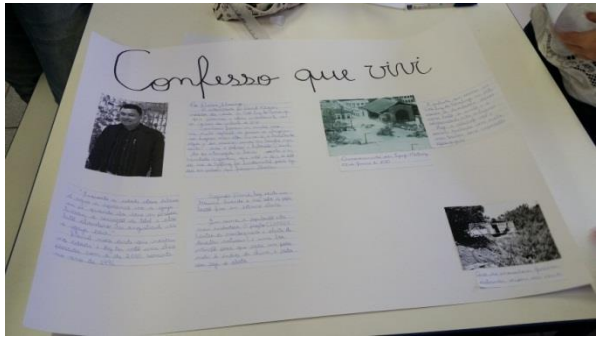
Mobile application -- rain gauges (data), #escolalerta, photos

- Registration (students, teachers, educational, guests)
- Download activities (teacher manages tasks)
- Uploading and sharing results in various formats

INTERDISCIPLINARY ACTIVITIES EMPOWERING PRINCIPLES:

"YOUTH EDUCATES YOUTH" ; "ONE GENERATION LEARN FROM ANOTHER"

RISK KNOWLEDGE (MEMORIES ABOUT DISASTERS -ORAL HISTORY)



RISK KNOWLEDGE (MAPPING THE WATERSHED)

MONITORING AND WARNING

RISK COMMUNICATION

Source: Marchezini and Trajber (2016); Marchezini et al (2017); Trajber et al (2019)

Int J Disaster Risk Sci (2017) 8:390–401
https://doi.org/10.1007/s13753-017-0150-9

www.ijdrs.com
www.springer.com/13753

ARTICLE

Participatory Early Warning Systems: Youth, Citizen Science, and Intergenerational Dialogues on Disaster Risk Reduction in Brazil

Victor Marchezini[1] · Rachel Trajber[1] · Débora Olivato[1] · Viviana Aguilar Muñoz[1] · Fernando de Oliveira Pereira[1] · Andréa Eliza Oliveira Luz[1]

Published online: 5 December 2017

Abstract Building national people-centered early warning systems (EWS) is strongly recommended by the United Nations International Strategy for Disaster Reduction (UNISDR). Most of the scientific literature is critical of the conventional view of EWS as a linear model with a top-down approach, in which technological features are given more attention than human factors. It is argued that EWS should be people-centered, and used for risk prevention, with an emphasis on resilience, rather than only being triggered when a hazard occurs. However, both the UNISDR and the literature fail to say how a people-centered EWS should be built, and what steps are needed to put EWS into effect. This article examines the obstacles and measures required to promote people-centered EWS, with a focus on the situation in Brazil. After assessing the institutional vulnerability of EWS, we analyze some measures that can be taken to reduce institutional vulnerability

1 Introduction

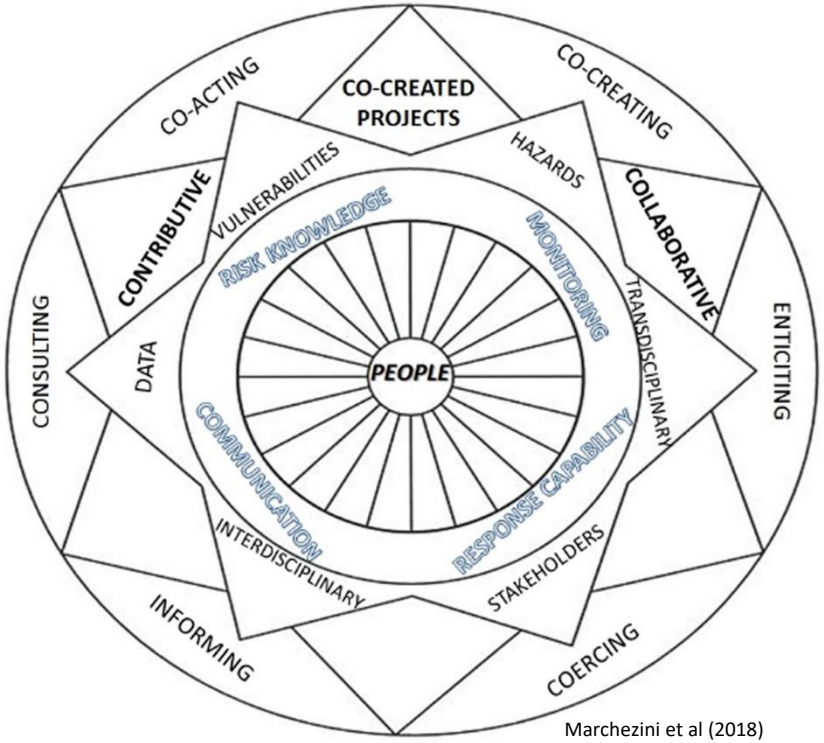
Three international conferences on early warning systems (EWS)—1998, 2003, 2006—addressed technical matters, strategic issues, and institutional requirements and made recommendations for strengthening EWS, including incorporating EWS into new policies and developmental frameworks (UNISDR 2004, 2006a, b). Emphasis was placed on the social factors in EWS and the need to guarantee mechanisms that could promote dialogue and collaborative action among the key stakeholders. The emphasis on social dimensions was a result of failures in the warning system during the December 2004 tsunami in the Indian Ocean. Following this disaster, questions were asked by the international community about why warnings had not been issued to reduce the loss of life, and an attempt was made to determine who could or should be

REVIEW article

Front. Earth Sci., 06 November 2018 | https://doi.org/10.3389/feart.2018.00184

A Review of Studies on Participatory Early Warning Systems (P-EWS): Pathways to Support Citizen Science Initiatives

Victor Marchezini[1,2*], Flávio Eduardo Aoki Horita[3], Patricia Mie Matsuo[4], Rachel Trajber[1], Miguel Angel Trejo-Rangel[2] and Débora Olivato[1]



Marchezini et al (2018)

Level	Power relationships	Type of participation
Active	Participants set their own agendas. Learnings occur through the negotiation of ways to carry them out actions in collaboration and power shifts depending on the negotiations.	Co-acting
	Participants use different forms of knowledge to integrate new understandings. They define common agendas, share responsibilities within existing institutional and social setting and constraints.	Co-creating
	One group takes the initiative and power for enticing other groups to act. They may set jointly issues such as agenda and priorities.	Enticing
	One group (often the government) searches information from different groups, but decides on the final project.	Consulting
	Information is usually just formal, in a one-way flow. It uses technical language and people often feel intimidated to express their views.	Informing
Passive	The will of one group is effectively imposed upon the other. People cannot give opinions nor defend their interests.	Coercing

Source: adapted from Dyball et al. (2009).

Article | Open Access | Published: 15 April 2020

"What is a Sociologist Doing Here?" An Unconventional People-Centered Approach to Improve Warning Implementation in the Sendai Framework for Disaster Risk Reduction

Victor Marchezini

International Journal of Disaster Risk Science **11**, 218–229 (2020) | Cite this article

Abstract

The Sendai Framework for Disaster Risk Reduction 2015–2030 recommends several actions for early warning systems (EWSs). However, there is a lack of information about their means of implementation. This article used institutional ethnography to analyze the 2012–2018 implementation of a national warning system in Brazil. The challenges related to daily activities, and the interdisciplinary works in the four axes of EWSs towards multi-hazard and people-centered approaches are discussed. This national experience is then discussed in the light of the global challenges of EWSs considering two main issues: (1) experiences of

Article | Open Access | Published: 11 February 2022

(In)visibilities About the Vulnerabilities of People with Visual Impairments to Disasters and Climate Change: A Case Study in Cuiabá, Brazil

Giselly Gomes, Victor Marchezini & Michèle Sato

International Journal of Disaster Risk Science **13**, 38–51 (2022) | Cite this article

Abstract

People with visual impairments (PwVI) represent a heterogeneous social group who often experience significant disabling barriers in exercising their rights throughout their life course. Understanding dimensions of vulnerability of PwVI to disasters and climate change is an important issue to reduce the culture of neglected disasters. To date, few studies have analyzed visual impairment and disaster risk reduction (DRR) in the countries of Latin America and the Caribbean. This exploratory qualitative research project analyzed how to include PwVI in the DRR policies of Brazil. The research question is: how can we include PwVI in the discussion of DRR and climate change? The response to this question is part of a joint effort that involved a

THANKS!

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