José Miguel Delgado

Ceará

Motivatio

Methods

First Results

Outlool

Monitoring Water Storage in Reservoirs from Space

José Miguel Delgado

University of Potsdam

March 22, 2018

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First Result

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- 1 Small dams in Ceará
- 2 Motivation
- 3 Methods
- 4 First Results
- 6 Outlook

Method

Outlool

- 1 Small dams in Ceará
- 2 Motivation

Outline

- **Methods**
- 4 First Results
- **5** Outlook

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Small dams in Ceará

Motivation

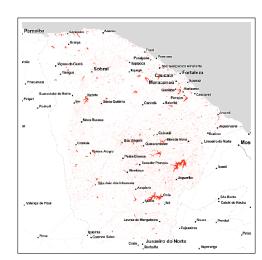
Methods

First Result

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water scarcity

Small dams in Ceará



Source: COGERH. 2016

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Small dams in Ceará

Motivation

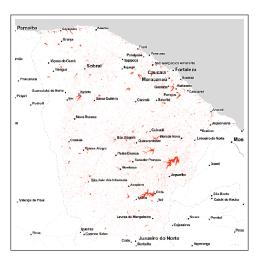
Methods

First Result

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Small dams in Ceará

- water scarcity
- 2 distributed water infrastructure (tens of thousands of dams)



Source: COGERH. 2016

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Small dams in Ceará

Motivation

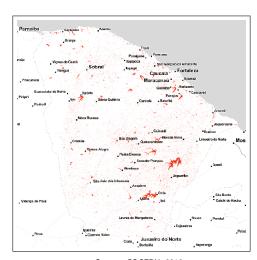
Method:

First Result

Outloo

Small dams in Ceará

- water scarcity
- 2 distributed water infrastructure (tens of thousands of dams)
- 3 most small dams used locally (unaccounted for management)



Source: COGERH, 2016

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Small dams in Ceará

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Outlook

Small dams in Ceará

First to empty, first to fill



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Small dams Ceará

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IWRM – Cannot manage what we do not measure

Objectives

 water management at community level



Small dams i Ceará

Motivation

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First Result

IWRM – Cannot manage what we do not measure

Objectives

- water management at community level
- 2 allocation of emergency resources



Method

First Result

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IWRM – Cannot manage what we do not measure

Objectives

- water management at community level
- allocation of emergency resources
- 3 water accounting making sense of how much water is available



Method

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Outloo

OSS, FOSS, FLOSS...

Objective

1 get the system running – improve on the way

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OSS, FOSS, FLOSS...

Objective

- 1 get the system running improve on the way
- 2 use open-source and free of charge data and tools (ESA's Sentinel mission, python, R, PostGIS, mongodb)

Method

First Results

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OSS, FOSS, FLOSS...

Objective

- 1 get the system running improve on the way
- 2 use open-source and free of charge data and tools (ESA's Sentinel mission, python, R, PostGIS, mongodb)
- 3 easy replicability (conda environments, git)

Methods

- Small dams in Ceará

Outline

- 3 Methods

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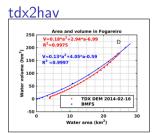
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Source: Zhang et al., 2016

ndwi2watermask



Source: ESA, 2018

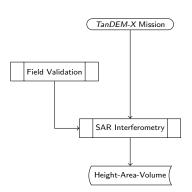
sar2watermask

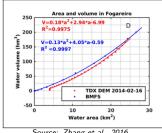


Source: *ESA*, 2018 ← ≣ → ← ≣ → □ ■ ✓ ○ ○

Methods

tdx2hav





Source: Zhang et al., 2016

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Small dams i

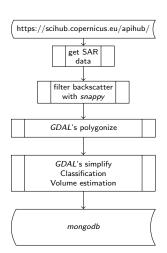
Motivation

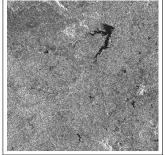
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sar2watermask



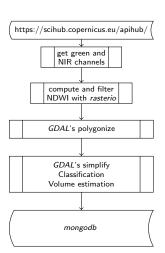


https://github.com/jmigueldelgado/sar2watermask

Methods

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ndwi2water mask





https://github.com/jmigueldelgado/ndwi2watermask

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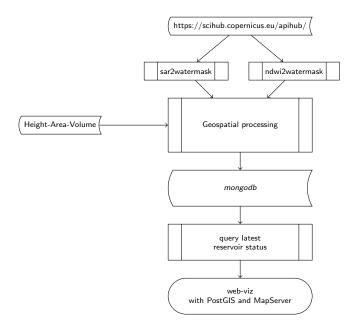
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First Results



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Small dams Ceará

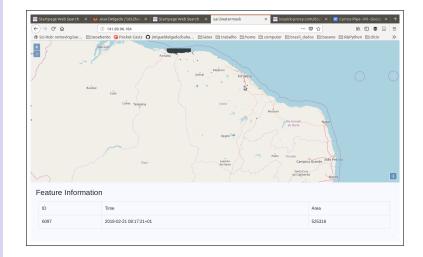
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First Results

Outlook

First Results (1)



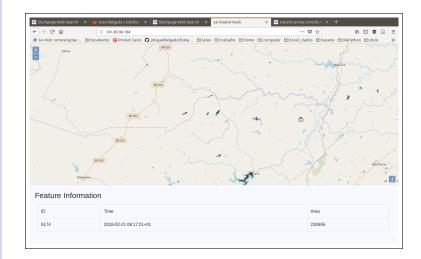
Small dams

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Method

First Results

First Results (2)



Small dams Ceará

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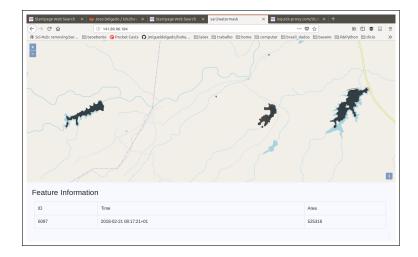
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First Results (3)



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Outlook

Outline





Outlook

Methods

First Results

Outlook

1 validation with monitored small/medium dams



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First Result

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- 1 validation with monitored small/medium dams
- 2 combining with community level water usage (watering animals, irrigation, human consumption)



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- 1 validation with monitored small/medium dams
- 2 combining with community level water usage (watering animals, irrigation, human consumption)
- 3 assimilation of small dam volumes into hydrological model



Method

First Results

Outlook

Our repositories and websites:

- http://seca-vista.geo.uni-potsdam.de
- http://github.com/jmigueldelgado/buhayra
- http://gitlab.com/jmigueldelgado/tdx2hav (still not open to the general public)

Thank you!

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