Adaptation of Irrigated agriculture to Climate change – AICHA-ATCHA Workshop. 14th-19th November 2016 at IISc Civil Engineering Department – Bangalore

# Integrated Modelling under the RECORD platform

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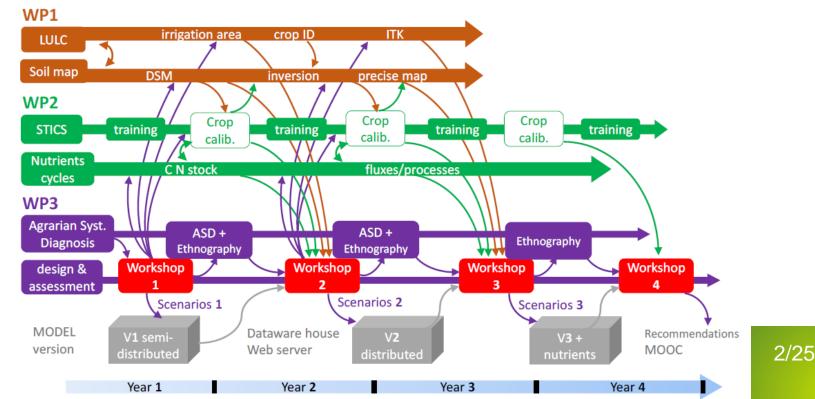




#### **Objectives**

#### Task 4.2: Integrated modelling under the RECORD platform

- Implement successive versions of the integrated model
  AICHA 2D prototype → ATCHA V1: semi distributed version of the model
  ATCHA V1 → ATCHA V2: fully distributed model
  ATCHA V2 → ATCHA V3: by including nutrient cycle
- Information system (datawarehouse) in order to:
  - manage data used to feed models and for pseudo validation.
  - manage the different software version of the models





#### **Human resources**

Software engineer – 24 months – April 2017  $\rightarrow$  March 2019

- Packaging of software components
- Participation to software development ATCHAV1 & ATCHAV2
- Development of the information system
- Participation to the scenario simulations

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Engineers RECORD platform (Eric & Helene)

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#### Other software engineers involved in AICHA and/or ATCHA

(P.Casel, S.Cézera)



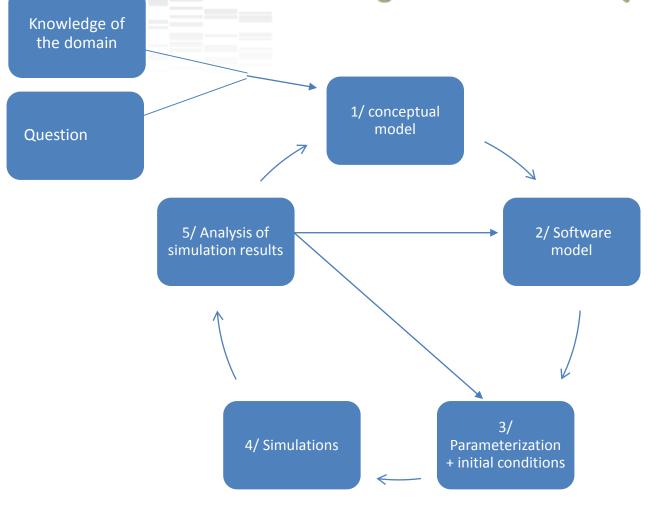


## **Modelling activity**



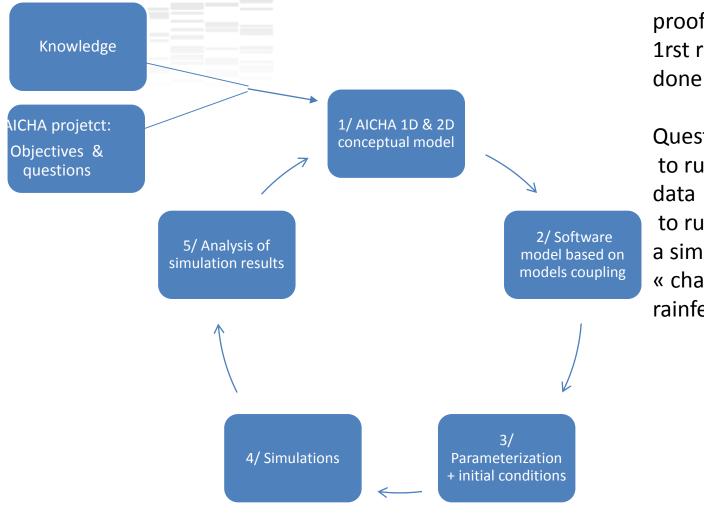


#### Methodology used to develop the different coupled model version: Modeling and Simulation cycle





## **Applied to AICHA Model**



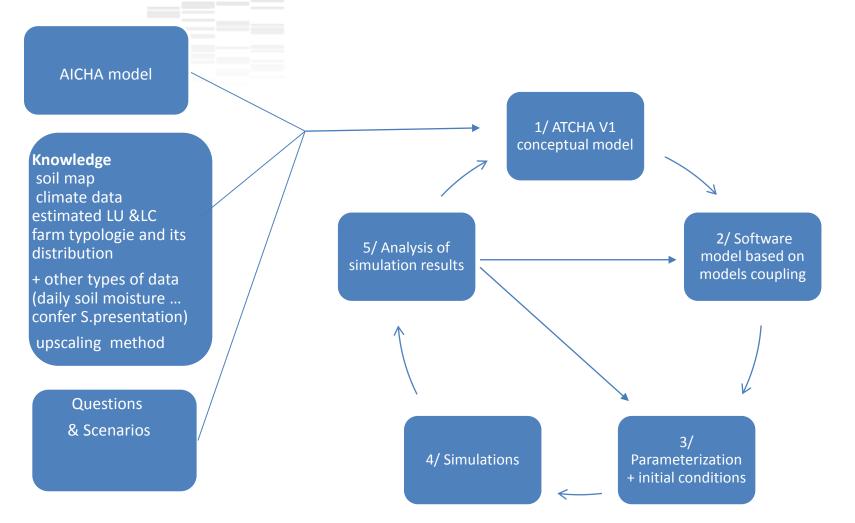
proof of concept 1rst round not completely done

Questions? to run simulations on past data to run simulations based on

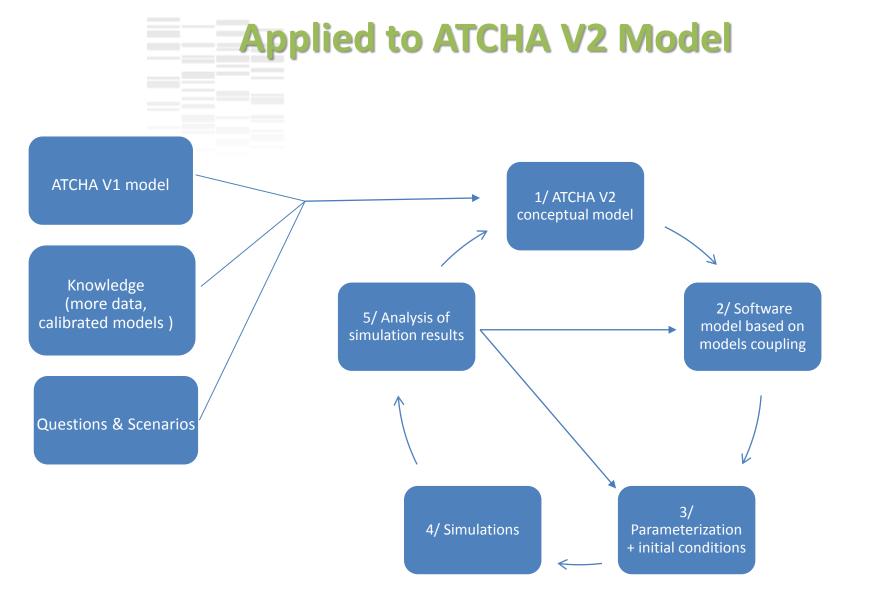
a simple scenario (example « change the ratio rainfed/irrigated crops)



## Applied to ATCHA V1 Model









## Partnership and connections with other tasks

- Strong interactions with WP3, task 3.1: scenario design and assessment
  - ightarrow To design scenarios to be simulated by the different coupled models
  - → To specify (if needed) interfaces to the coupled model, in order to ease its use
  - $\rightarrow$  For results analysis
- Interactions with modellers and people who will calibrate models:

 $\rightarrow$  STICS:

new crops, calibration of the model including nitrogen – Tasks 2.1 and 2.2 new salinity module and its calibration – Task 2.2

 $\rightarrow$  AMBHAS: calibration, values for parameters. Who is in charge of this model?

#### Interactions with WP1 « data providers »

 $\rightarrow$  to provide data for initialisation, parameterization, and validation of the coupled models

Land Use and land cover  $\rightarrow$  Task 1.1

Improved soil map  $\rightarrow$  Task 1.2





#### **Collaborative tools**

#### • "Forge ATCHA"

**SCIENCE & IMPACT** 

Forge: a web-based collaborative software platform for both developing and sharing computer applications. Includes the versioning of the different models.

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## **Data for models**





- Information system will be developped in order to:
  - Have an **inventory of data** available for the project
  - Share data:
    - data required by the modelling activity (and beyond)
    - simulations results
  - **Gather data** required by modelling activity on identified locations.
    - GeoSAS  $\rightarrow$  for spatialized data
    - ftp server → for others. (access to define- Web interface)

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- Check quality of data
  - R routines will be developped





#### Data

- Organize and characterize data
  - By associating **metadata** to the data
    - metadata are informations that provide information about other data
    - These metadata characterize when and how the data have been collected, units and also semantic of the data.
  - Try to be compliant with standards shared by different communities.
    Some examples of standards:
    - Inspire: <u>http://inspire.ec.europa.eu/</u> to combine spatial data and services from different sources across the European Community in a consistent way without involving specific efforts of humans or machines.
    - AGROVOC <u>http://aims.fao.org/vest-registry/vocabularies/agrovoc-multilingual-agricultural-thesaurus</u>.
      AGROVOC is a controlled vocabulary covering all areas of interest of the Food and Agriculture Organization (FAO) of the United Nations, including food, nutrition, agriculture, fisheries, forestry, environment etc





## Dissemination and building capacity (linked to task 4.3





#### • Training sessions could be organized:

- On generic issues such as coupling models, develop decision model ...
- On specific issues linked to the use of ATCHA model (or simplified version of ATCHA models)
- Different types:
  - MOOC (on line courses )
  - In Bangalore, connected to WS event.





## Thank you for your attention



