TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Forest, Geo and Hydro Sciences
Institute of International Forestry and Forest Products

MODELING AND FORECAST OF CHANGES IN LAND-USE AND LAND-COVER, CAUSED BY CLIMATE CHANGE IN PERUVIAN ANDES.

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MEAN OBJECTS

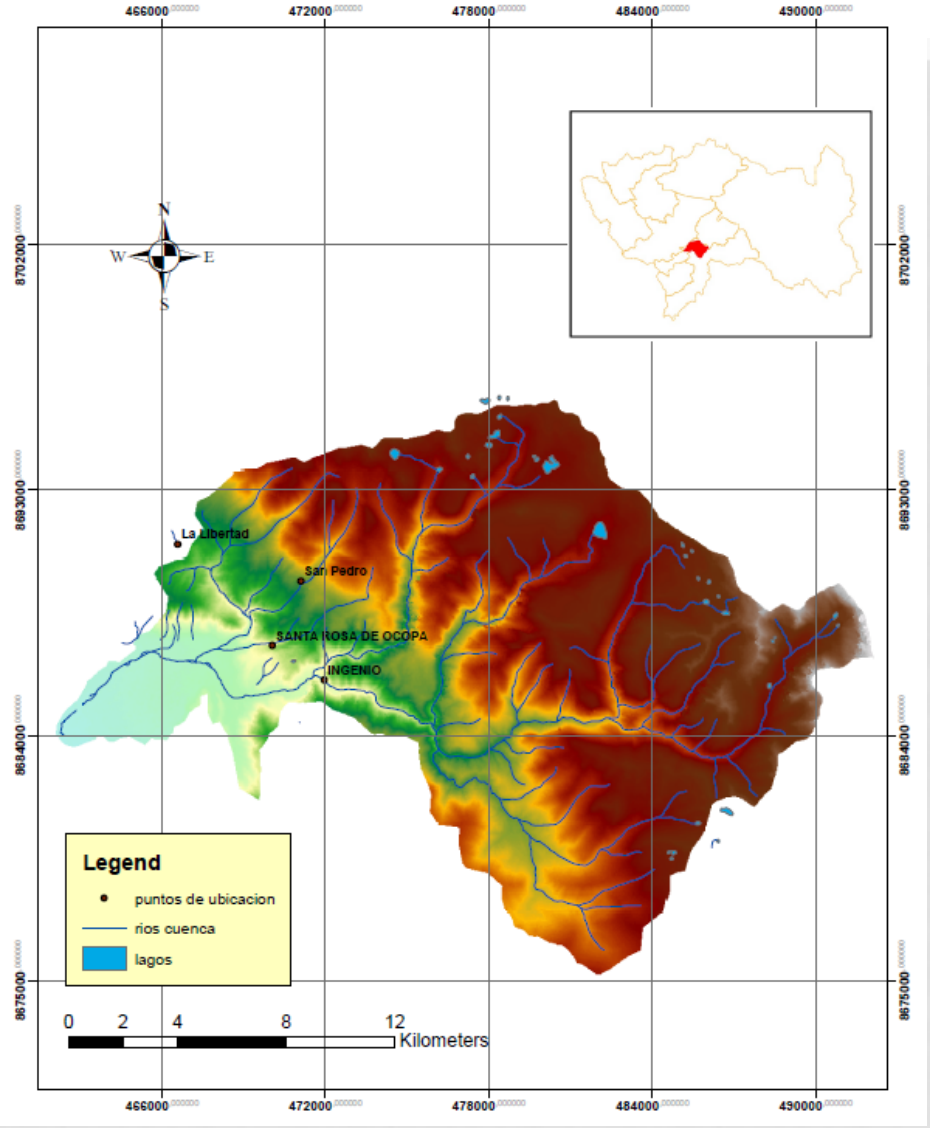
To elaborate a model, which predicts the changes in land-use and land-cover in the Achamayo watershed till year 2050 for the following crops and tree species:

- *Ullucus tuberosus*
- *Solanum tuberosum*
- *Cynara cardunculus*
- *Lolium perenne*
- *Eucalyptus globulus*
- *Polylepis incana*

SPECIFIC OBJECTS

1. Mapping current land use and land cover.
2. Determine the trend in rising temperatures.
3. Investigate the ecological requirements (temperature)of the most important agricultural plants and trees of the region.

STUDY AREA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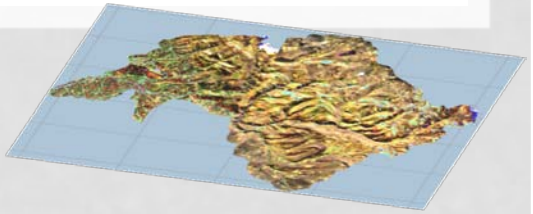
478000
484000
490000
8702000
8693000
8684000
8675000
N
W
E
S
La Libertad
San Pedro
SANTA ROSA DE OCOPA
INGENIO
Legend
puntos de ubicacion
rios cuenca
lagos
0 2 4 8 12
Kilometers

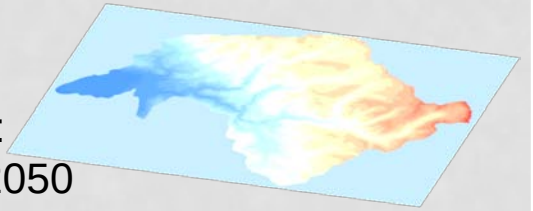
METHODOLOGY

1. **Land -use/ -cover map**
   - current distribution of crops & trees



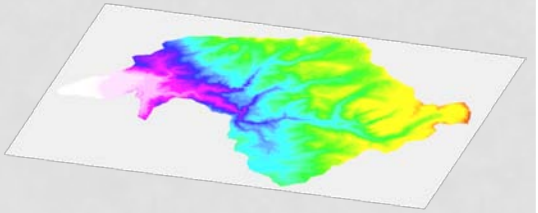
2. **Model of temperature distribution from IGP**

   Tendency of temperature:
   1. rising by + 1,3°C until 2050
   2. falling by -3°C



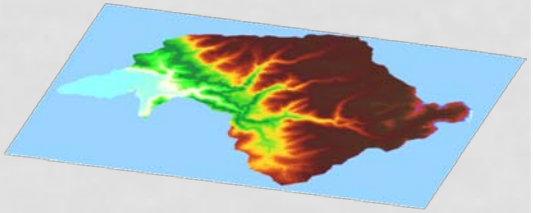
3. **Model of temperature distribution in 2050**

   Temperature tolerance of plants
   Crop calendar



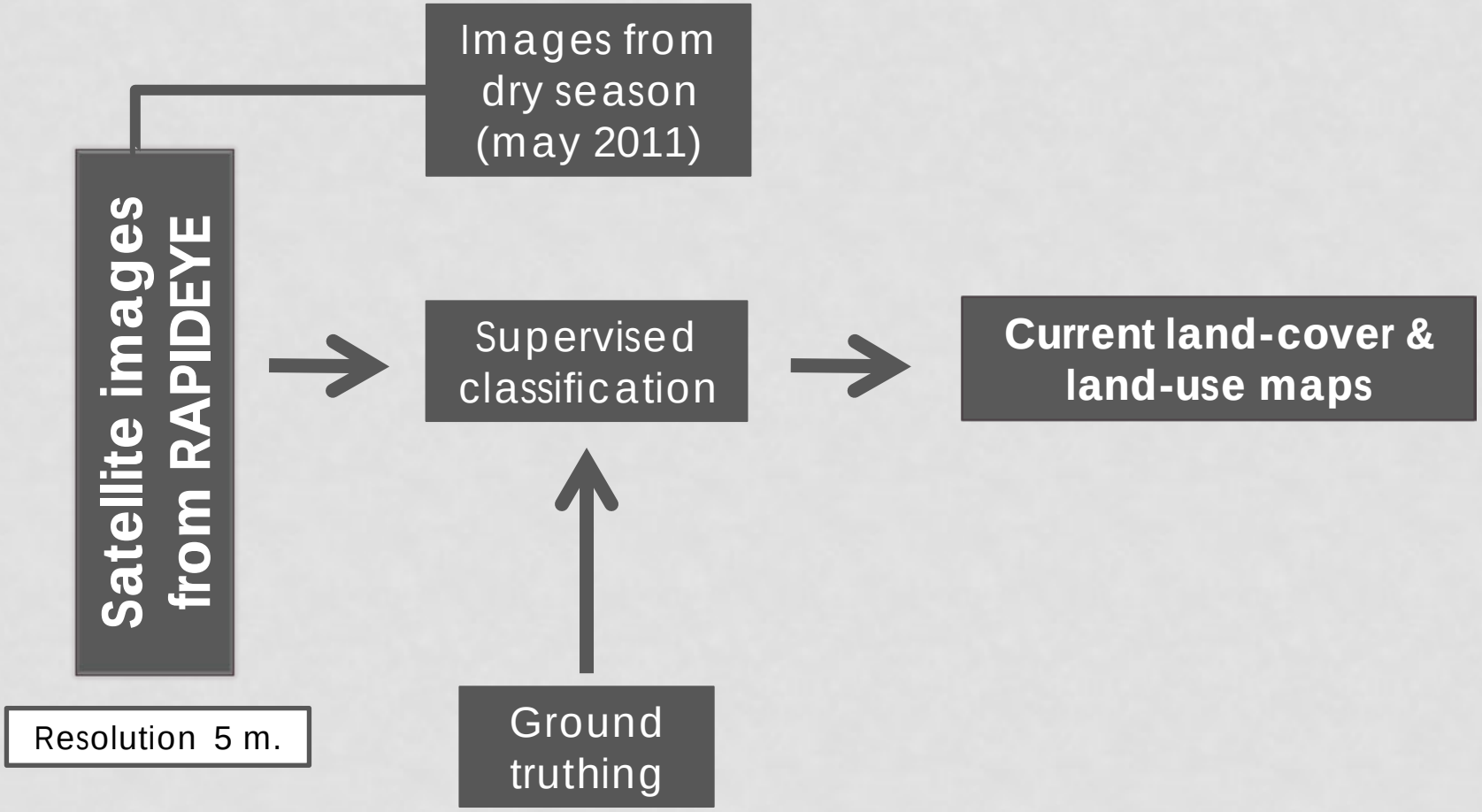
4. **Future distribution of crops/ trees**

   Land suitable/ land possible/ no suitable land



METHODOLOGY

1. Mapping current use and land cover using remote sensing



METHODOLOGY

CROPS: based on maximum and minimum air temperature during growing season

tolerance of temperature

areas with optimum temperature	areas in range of min./ max. temperature	areas out of temperature tolerance
↓	↓	↓
suitable for growing	possible growing areas	not suitable for growing

METHODOLOGY

TREES

annual average temperature as parameter for growth

minimum temperature of tolerance as contour line for each species

METHODOLOGY

WORK IN PROGRESS

1. literature research ✓

2. map of currant land use/ - cover
    1. fieldwork/ ground truthing ✓
    2. image correction ✓
    3. classification ✗

3. Model ✗


MUCHAS GRACIAS!