The 5th AIM International Workshop

Outline of Impact Model in Korea

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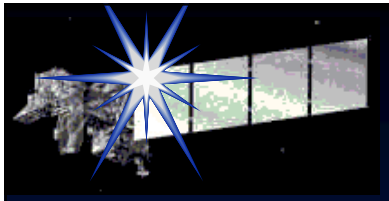
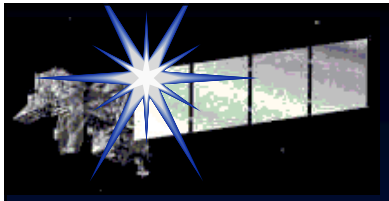


I. Contents

- General Reviews
- Module-by-Module Examinations
- Data Collection, Analysis, and Establishment
- Evaluation of Water Balance Model Outputs
- Future Plans

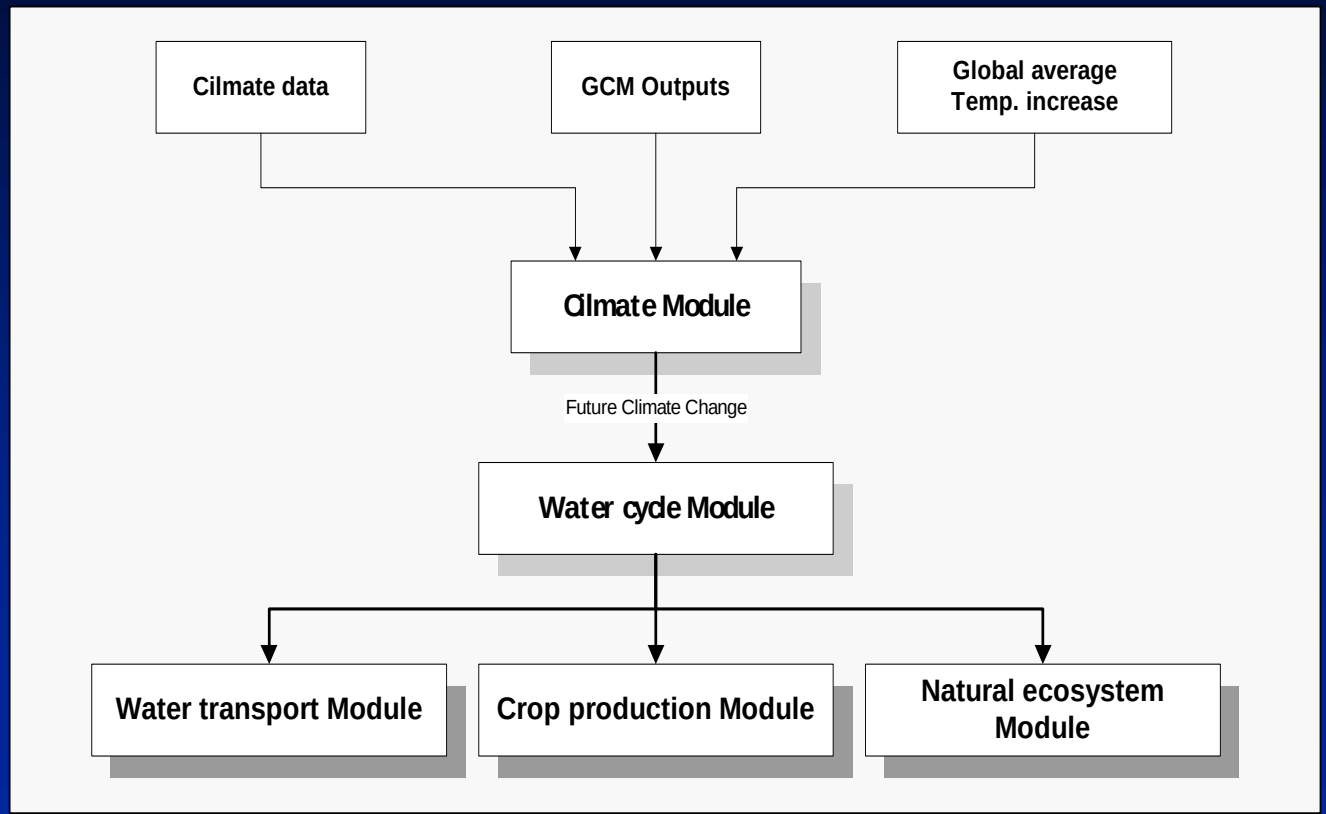


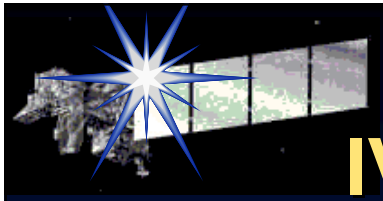
II. Objectives

- To Develop an AIM/Korea Impact Model on the Conceptual Framework Developed by the Japanese AIM Team

- To Tune Up and Modify the AIM/Impact Model to Enhance the Data Compatibility and Prediction Performance

III. AIM Impact Model





IV. AIM/Korea Impact Model

1. Data Set for Model

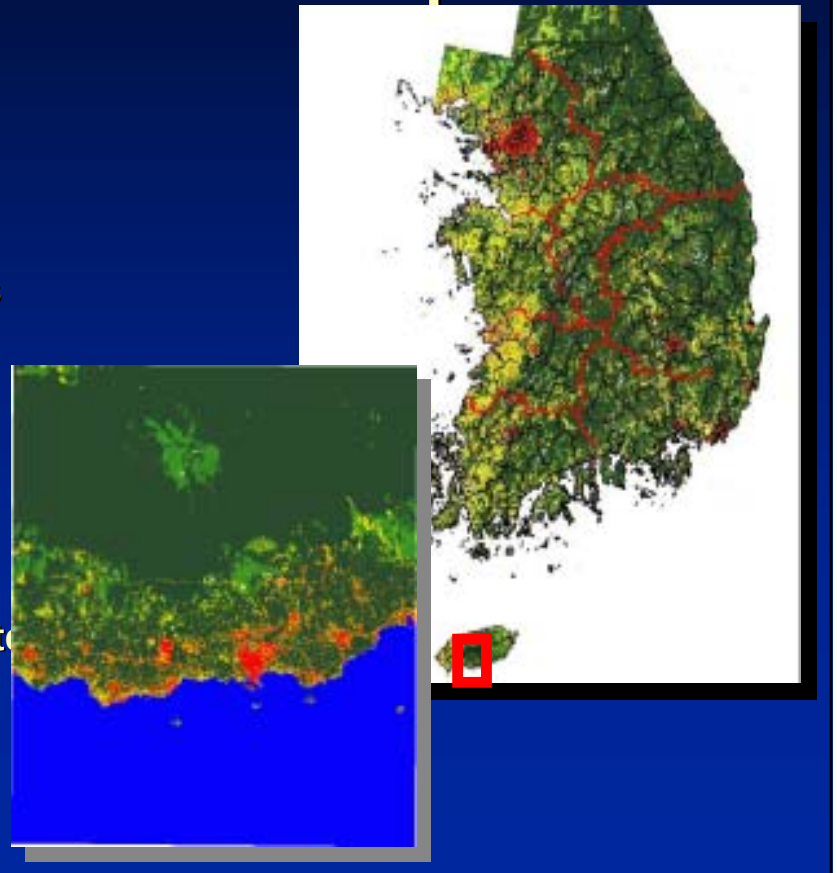
- National Land Cover Classification Map
- National Digital Elevation Model
- National Current Vegetation Map
- National Soil Map
- Regional General Circulation Model

IV. AIM/Korea Impact Model

National Landcover Classification Map

- Raw Data : Landsat TM

- Methods
  - Classify the land cover into 7 categories by a combination of unsupervised and supervised classification methods using Landsat TM satellite data
  - The 7 classification categories are: Built-up area, forest, agricultural area, grassland, barren land, wetland, and wat
  - The classification accuracy is estimated to be 75% to 85% maintaining 30-meter ground resolution



IV. AIM/Korea Impact Model

National Digital Elevation Model

- Raw Data : 1:50,000 Scale Contour

- Methods
  - Derived from the contour layer of 1:50,000 standard topographic digital map
  - Grid size is 30m

IV. AIM/Korea Impact Model

National Current Vegetation Map

- Raw Data : Korean Actual Vegetation Map produced by the Ministry of Environment, Korea

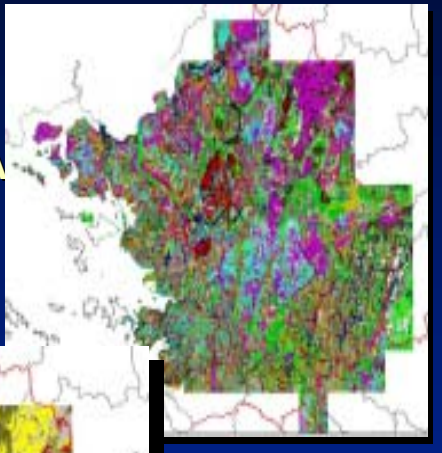
- Methods
  - Digitalized the 1:50,000 scale National Actual Vegetation Map produced by the Korean Ministry of Environment to GIS format
  - Vegetation community level classification by ground truth survey
  - 1:50,000 scale National GIS Database Project an currently updating the records
  - Representing 229 vegetation communities

IV. AIM/Korea Impact Model

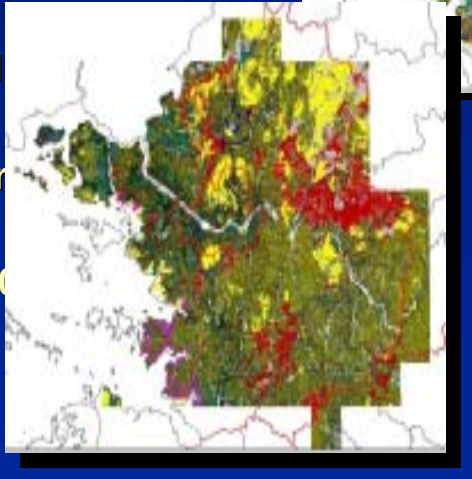
National Soil Map

- Raw Data : National Soil Map produced by National Institute of Agricultural Science and Technology (NIA

- Methods
  - Classification based on the soil's physical characteristics
  - Field capacity is calculated with soil textur soil depth, and water content percentage
  - Expected to be completed by the end of 2



<Soil Map>

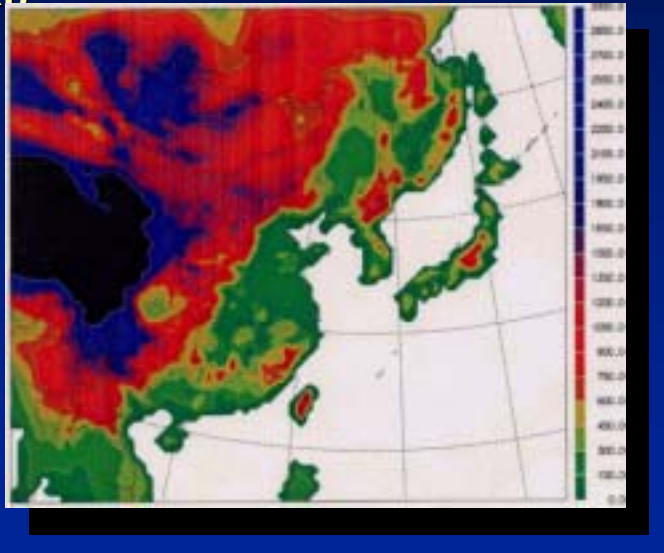


<FC Map>

IV. AIM/Korea Impact Model

Regional General Circulation Model

- Raw Data : GCM Data produced by Meteorological research Institute(METRI)



- Methods
  - Physical model using general circulation model(GCM) based on the boundary condition
  - Used as the atmospheric inputs to run METRI-meso Realtime Forecast Model
  - Grid size is 60Km

IV. AIM/Korea Impact Model

2. Comparison of Results;

Assessment of Impact on Korea's Water Resources

- **AIM/Korean IMPACT model has been reprogramed by FORTRAN to enhance the data compatibility**

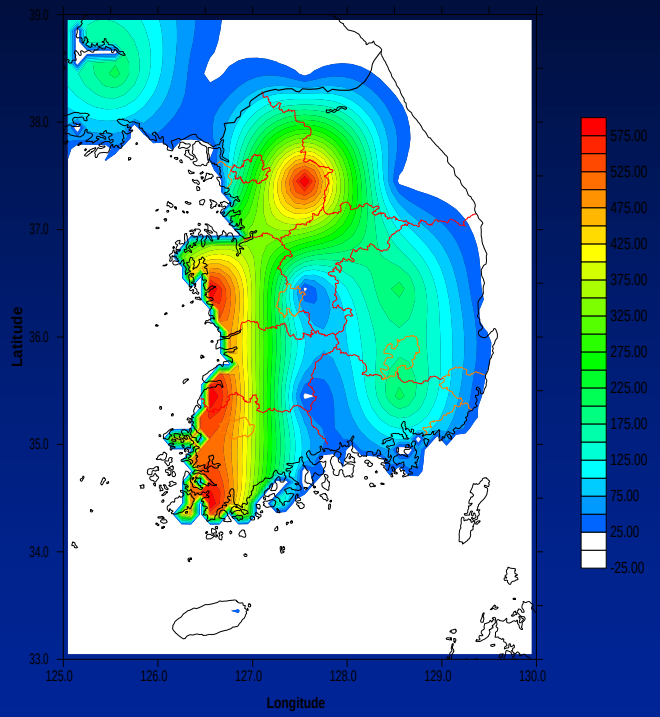
- **Climate Data and Information Basis**

- Input data is interpolated into 0.1 degree grid with 50 pixels in column and 60 pixels in row.

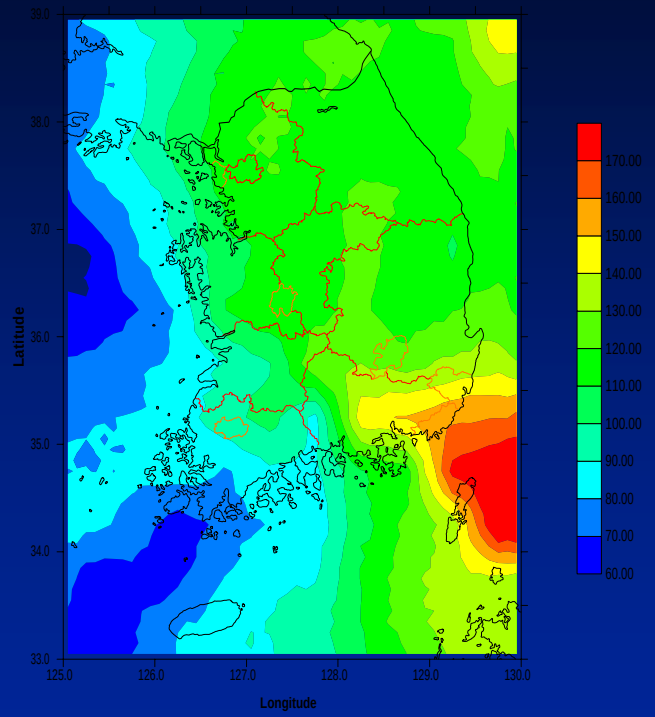
- 1-degree field capacity data is resampled to 0.1-degree grid data

- The surface runoff under current climate is validated with a model developed by Korea Research Institute for Human Settlements

IV. AIM/Korea Impact Model

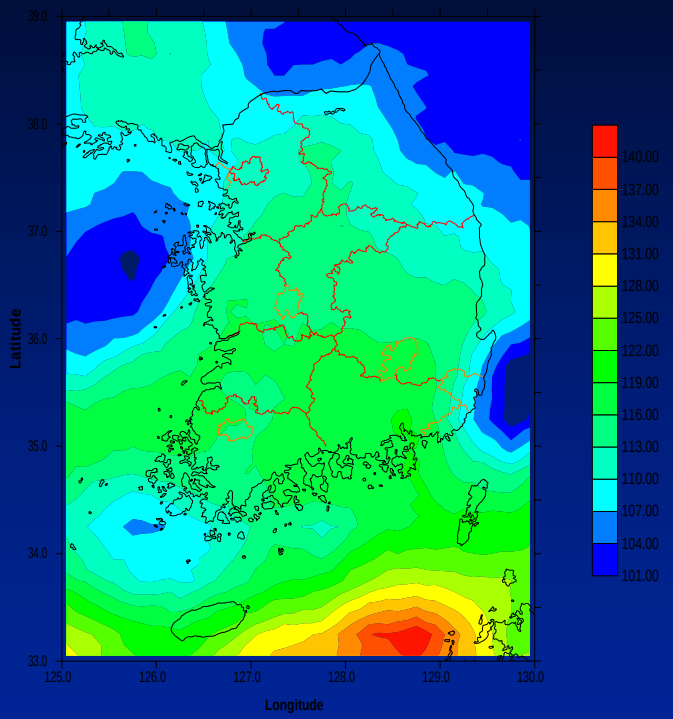


Field Capacity (mm)

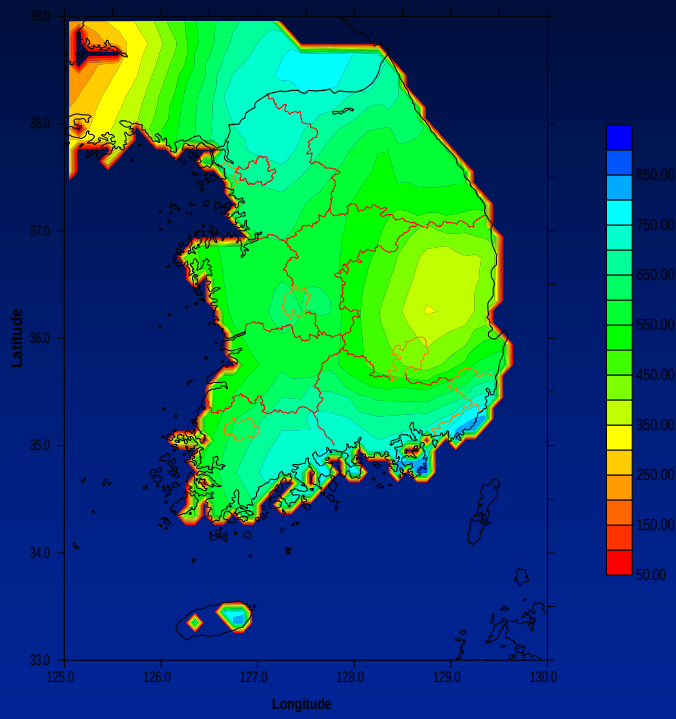


Change in Yearly Precipitation Expected by Climate Change (mm/year)

IV. AIM/Korea Impact Model



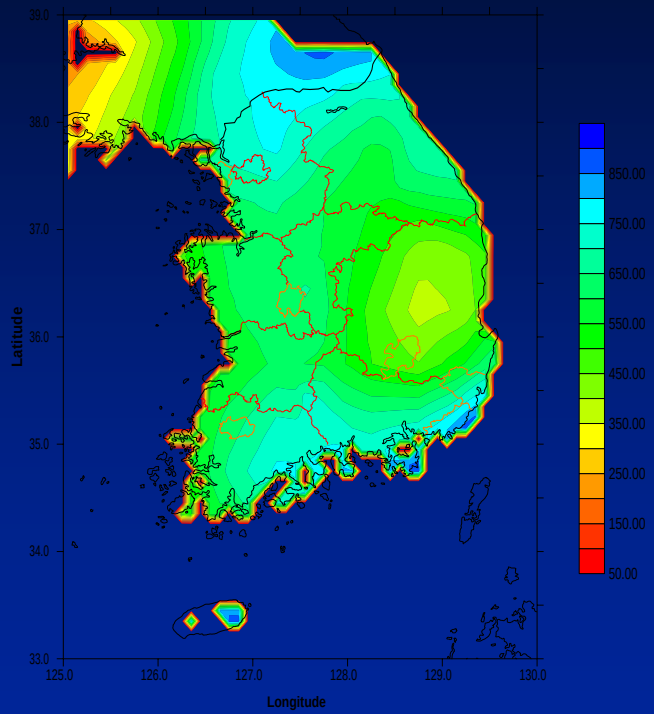
Change in Yearly Potential Evapotranspiration (mm/year)



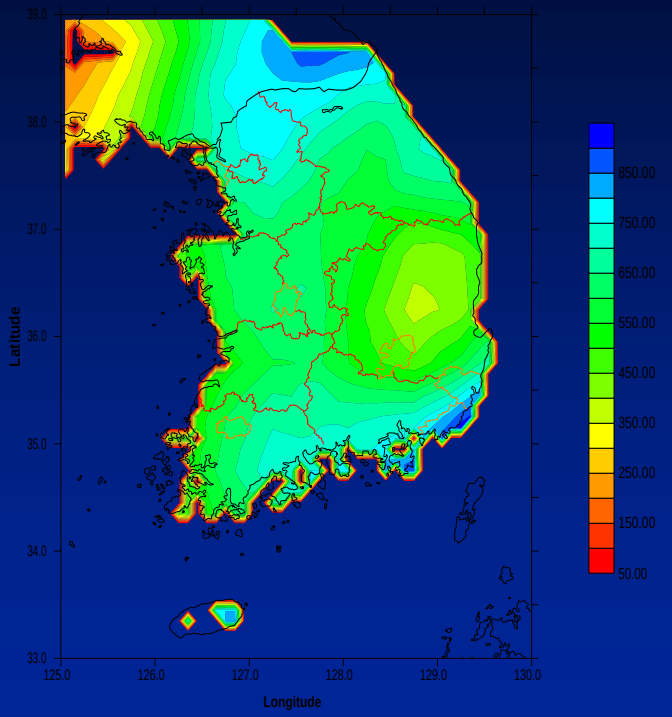
Yearly Surface Runoff (Current Climate) (mm/year)

IV. AIM/Korea Impact Model

Yearly Surface Runoff



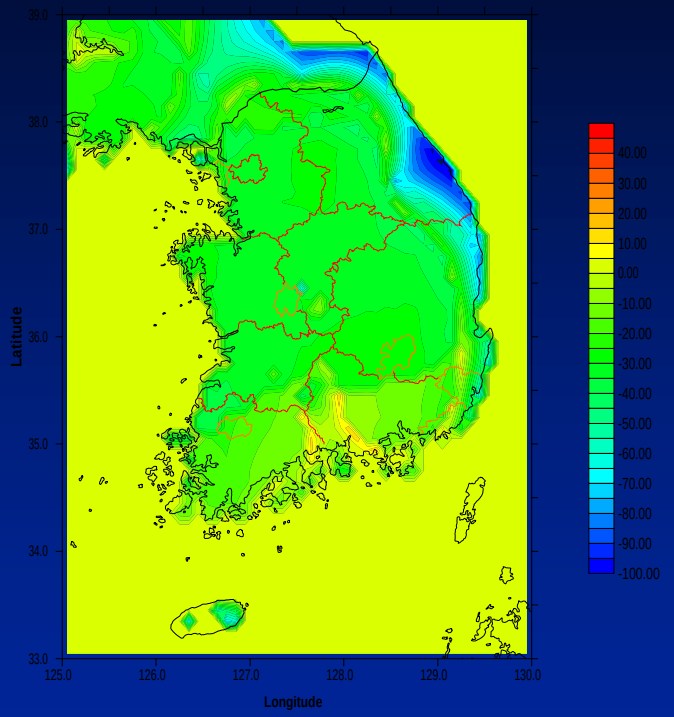
Current Climate



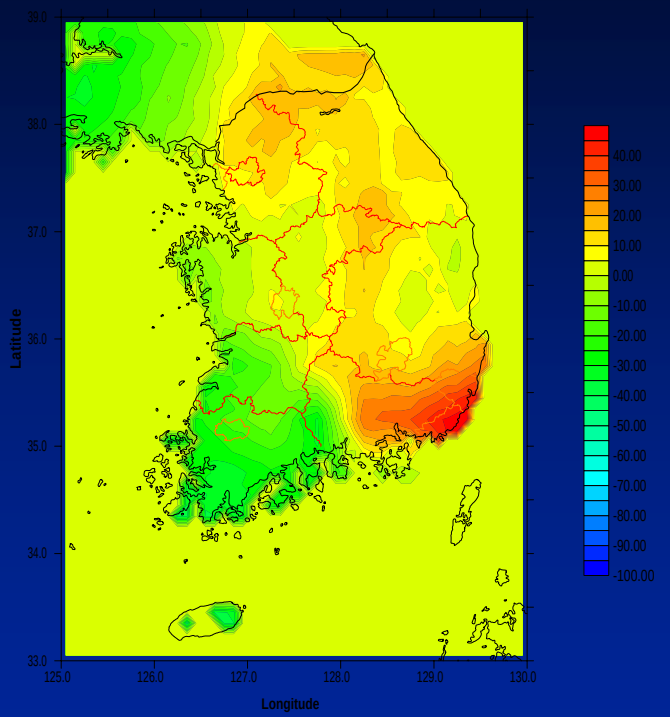
Changed Climate

(mm/year)

IV. AIM/Impact Model



Difference in Yearly Surface Runoff between the KRIHS Model and Produced Model (Under Current Climate, mm/year)

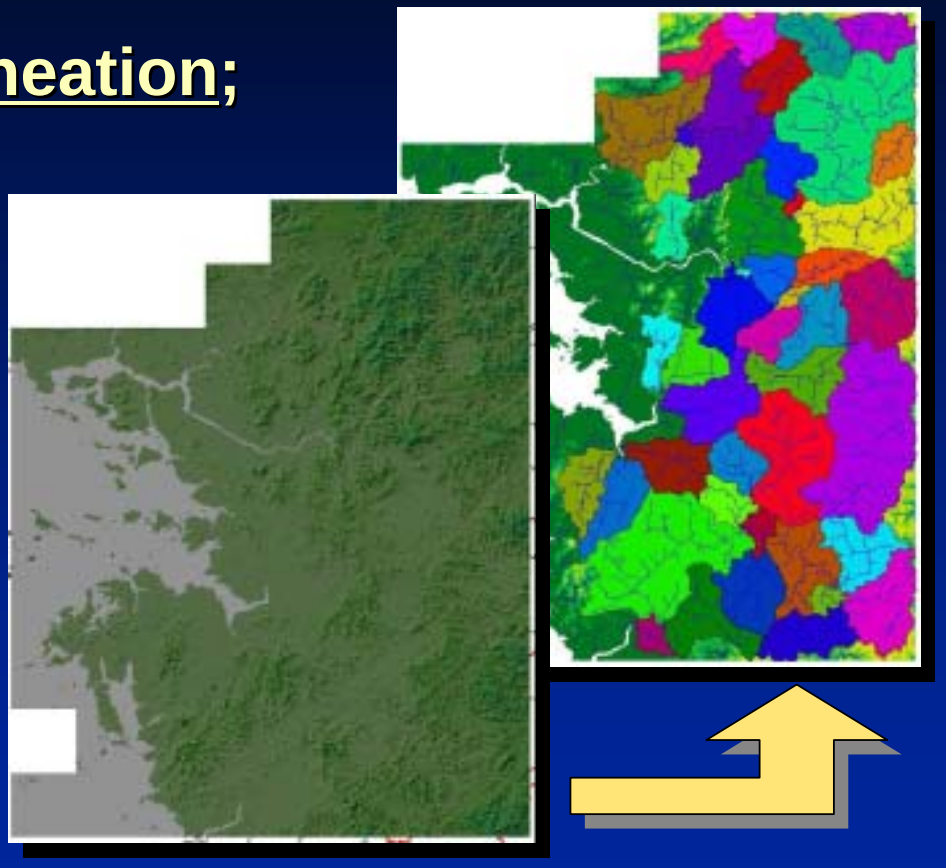


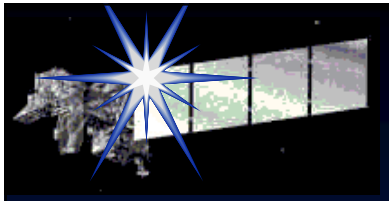
Difference in Yearly Surface Runoff between Runoffs under Current Climate and Changed Climate (mm/year)

IV. AIM Impact Model in Korea

3. Watershed Delineation;

- Arc/View GIS Used
- Watershed is delineated based on the location of monitoring stations





V. Future Study

- **1999**

  - Literature Reviews

  - Create Basic Database such as Landcover Classification,

  Digitial Elevation Model, Current Vegetation Map and

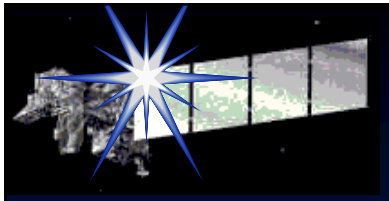
  Soil Map

- **2000-2001**

  - To Compare Climate Change Scenario

  - To Development Impact Assessment Methodology

  - To Initiate Pilot Studies on Various Sectors



V. Future Study

- **2002-2003**

  - To Apply AIM/Korea Impact Model to Various Sectors

  - To Suggest Integrated Impact Assessment using AIM

  Impact Model

  - To Integrate Sectoral Models

  - To Conduct Economic Impact Analysis