Landmod2010 – International Conference on Integrative Landscape Modelling February 3 – 5, 2010; Montpellier SubAgro, INRA, Montpellier, France



A case study of social-ecologically-based management of ecosystem services: Global change impacts on agricultural production versus water quality in mountain landscapes

John Tenhunen University of Bayreuth, Germany

Members of the TERRECO Project (Complex <u>Terrain and Ecological Heterogeneity</u>)









Evaluation of Ecosystem Services





CORE

SCIENCE

TERRECO: NATURAL



Haean Catchment - for field studies and model testing



Production/Hydrological/Economic Framework:



www.bayceer.uni-bayreuth.de/terreco



Social – Ecological Analysis Ultimately, A Focus on Scenario Evaluations



Development of Scenarios: Future Climate and Land Use Fertilizer and pesticide reduction, subsidies for land use with erosion control, new pricing of clean water supply, modification of water distribution . . . even reunification (?)



Agency Discourse and Scenario Development: Cooperative Studies with <u>Research Institute Gangwon</u>



Science Framework of TERRECO

PNAS | February 3, 2009 | vol. 106 | no. 5 | 1305–1312 Science for managing ecosystem services: Beyond the Millennium Ecosystem Assessment

Stephen R. Carpenter^{a,1}, Harold A. Mooney^b, John Agard^c, Doris Capistrano^d, Ruth S. DeFries^a, Sandra Diaz¹, Thomas Dietz⁹, Anantha K. Duraiappah^h, Alfred Oteng-Yeboah¹, Henrique Miguel Pereira¹, Charles Perrings^k, Walter V. Reid¹, José Sarukhan^m, Robert J. Scholesⁿ, and Anne Whyteⁿ

Ecohydrological assessments are needed which are modeled on the Millenium Assessment (but at different scales) which:

address the effects of <u>multiple drivers</u>, structural factors including biodiversity, and <u>human feedbacks</u> on ecosystem services (production and water use vs. water yield and water quality),

model coupled social-ecological systems and match the models to conceptual goals,

seek to enhance our capacity to <u>identify the outcomes of current activities</u> . . . <u>expand the use of scenario methods</u> . . .

and provide for communication on uncertainties to experts and stakeholders.

