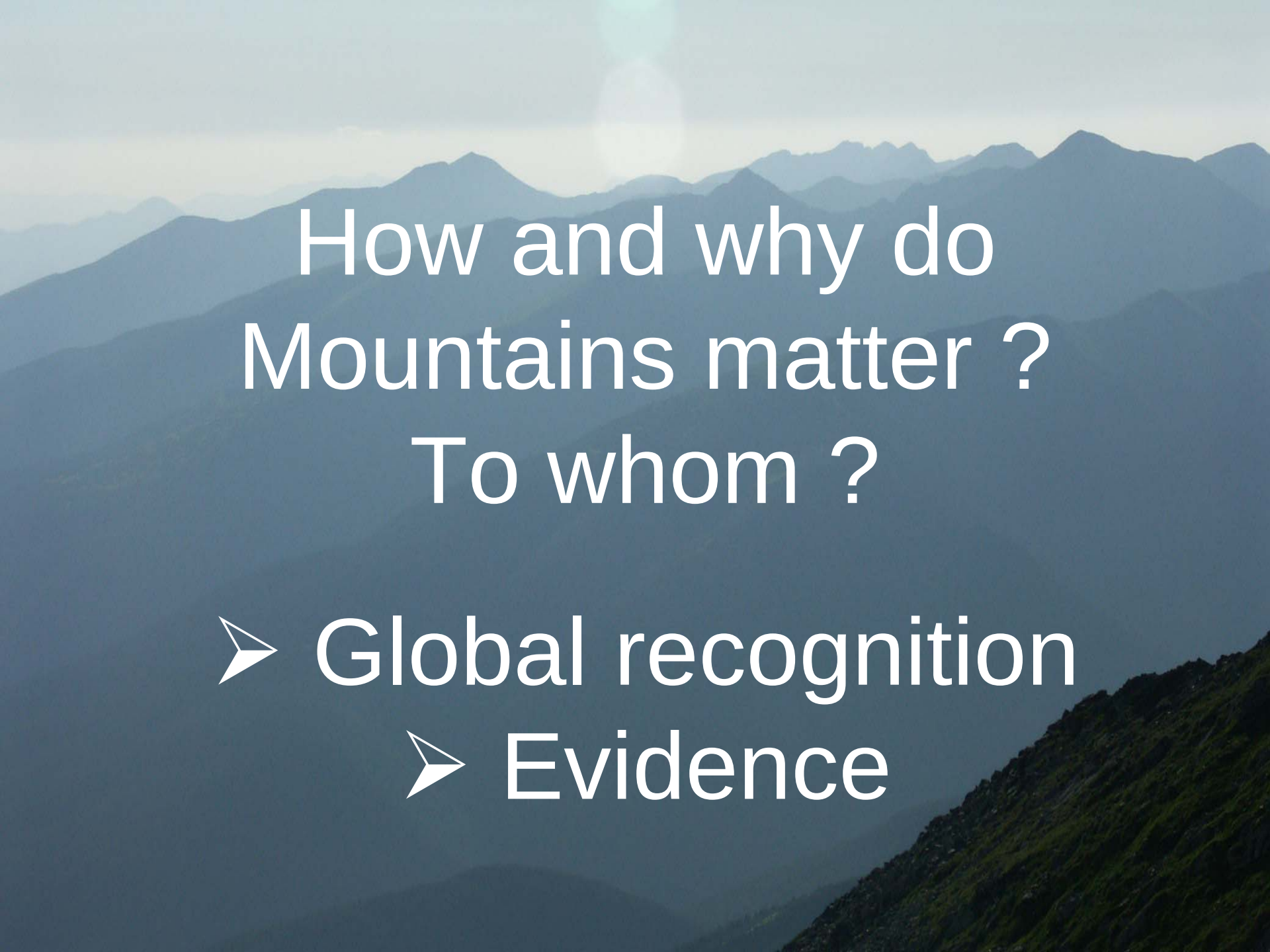

Mountains matter



How and why do Mountains matter ? To whom ?

- Global recognition
- Evidence

Mountain people

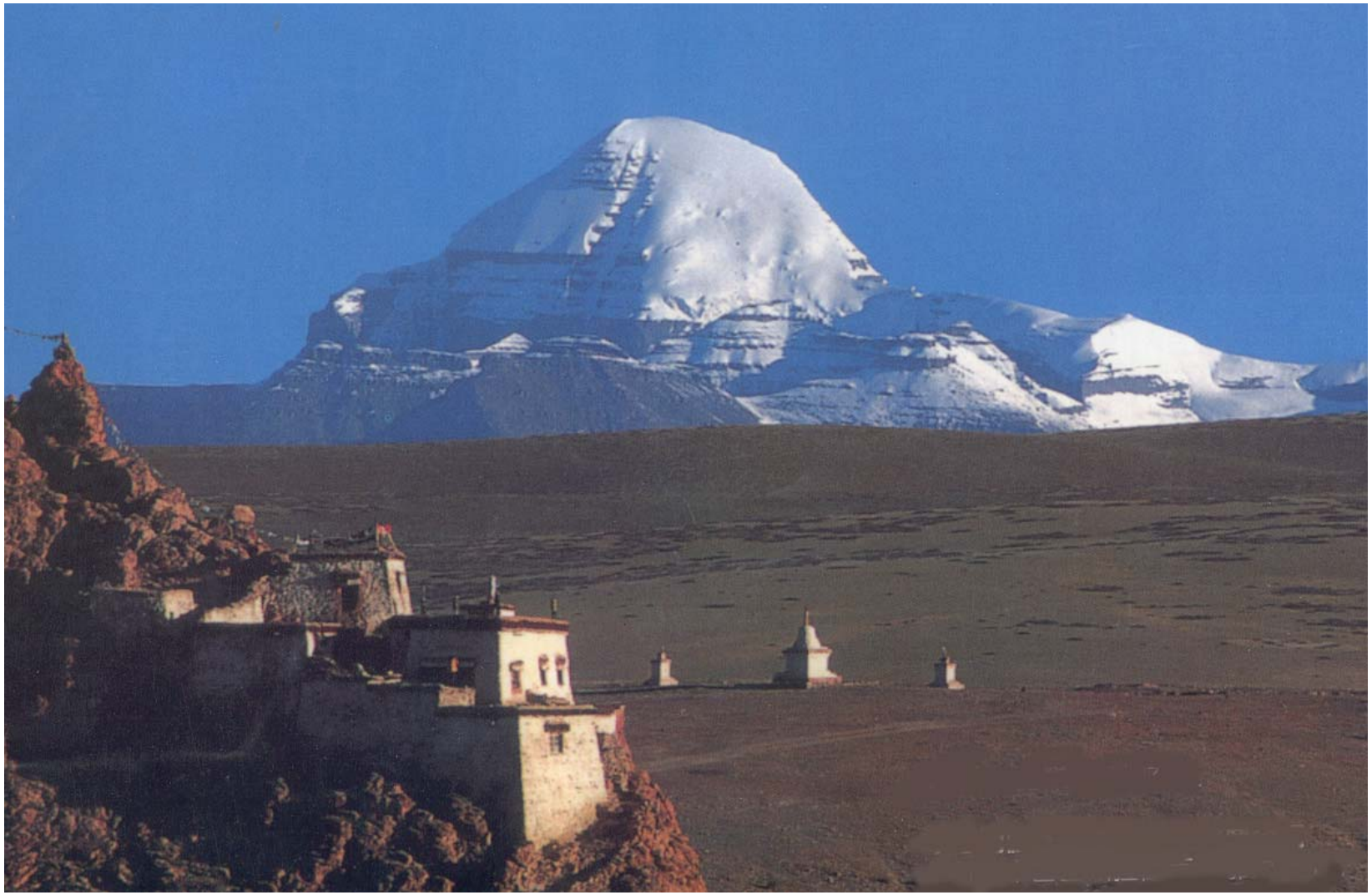
Mountain people

Mountain people

Mountaineers

Mountaineers

Sacred places

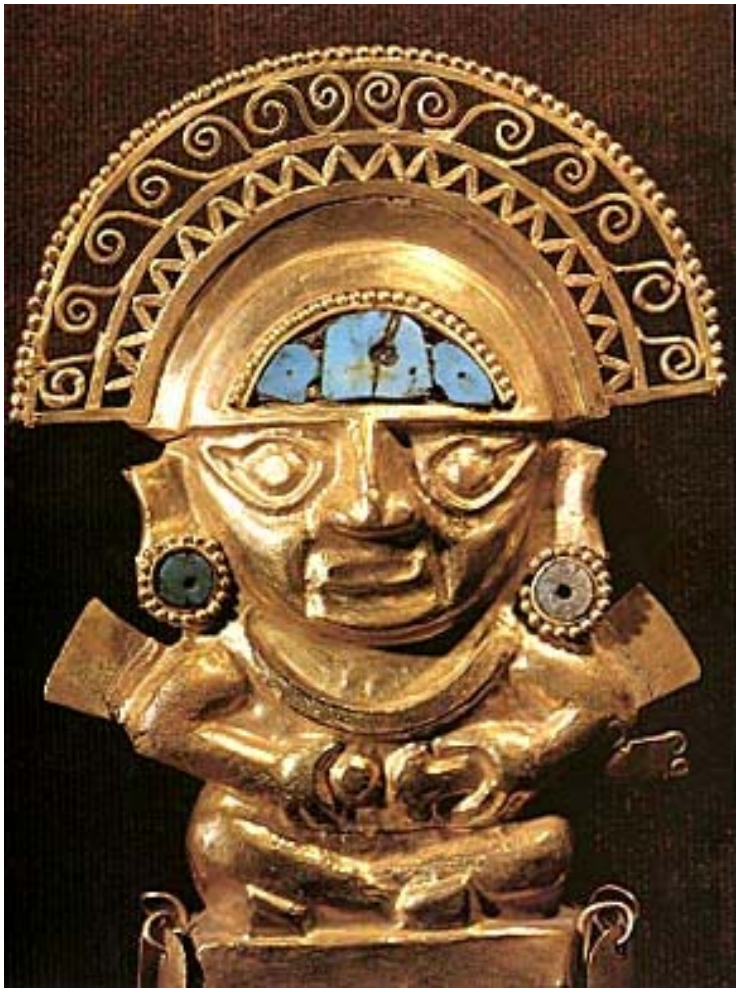


Sacred places

Sacred places

Sacred places

Minerals



Minerals

Minerals

Minerals

Crops

Crops

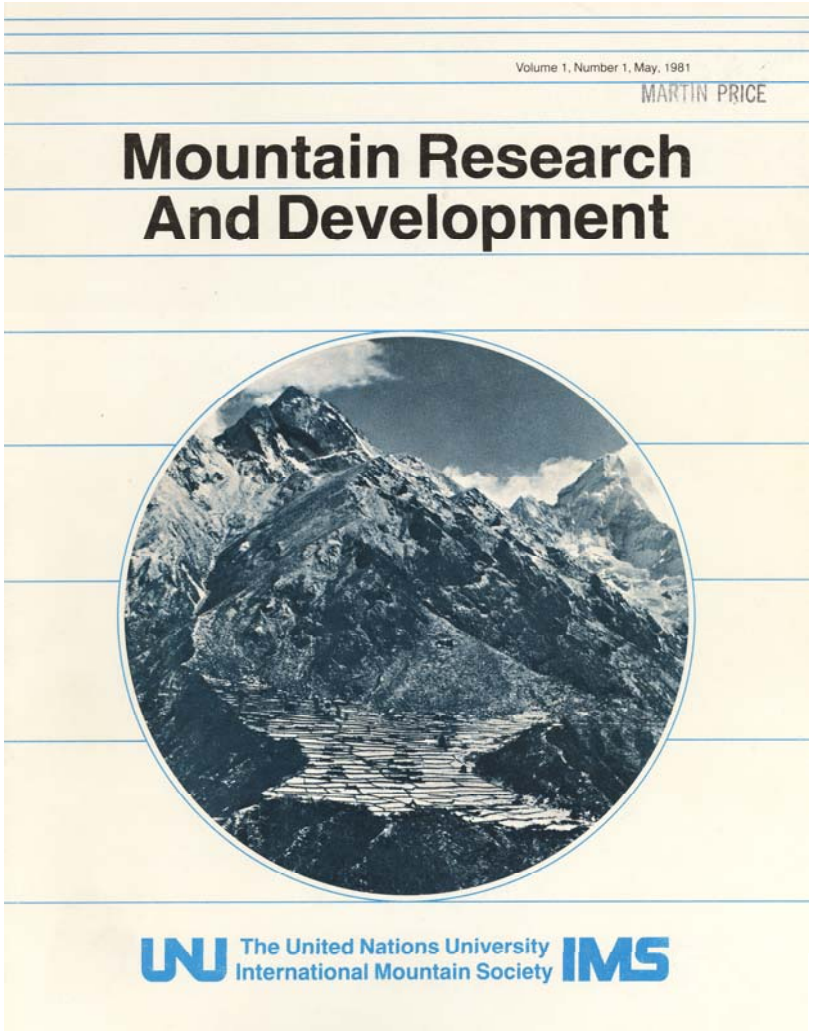
Crops

Crops

Crops

Crops

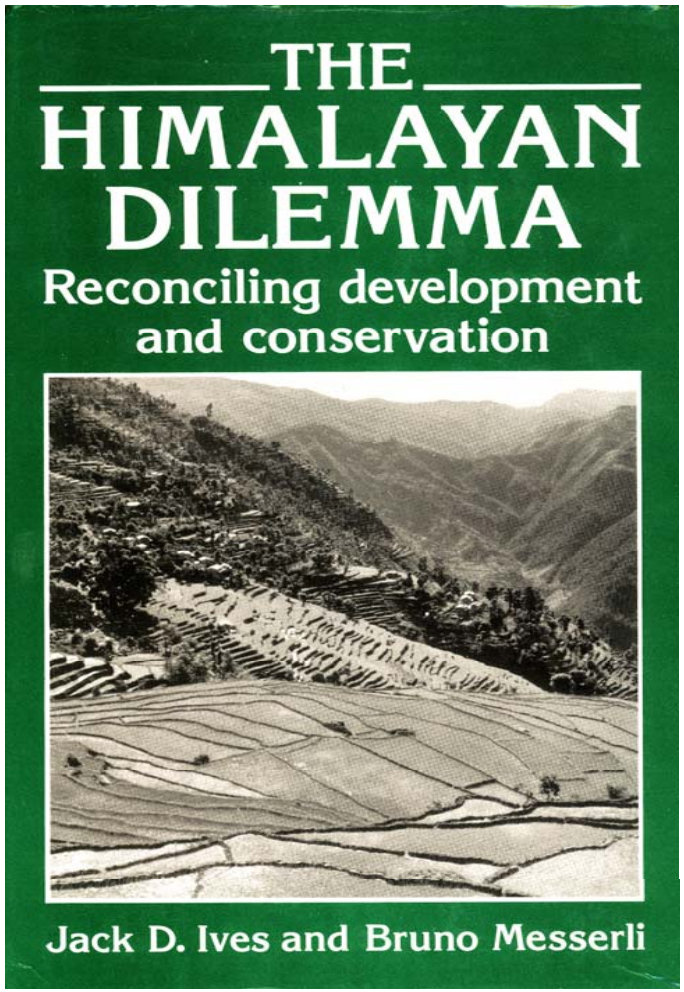
1981


Volume 1, Number 1, May, 1981
MARTIN PRICE
Mountain Research
And Development
The United Nations University
International Mountain Society
IMS

1983

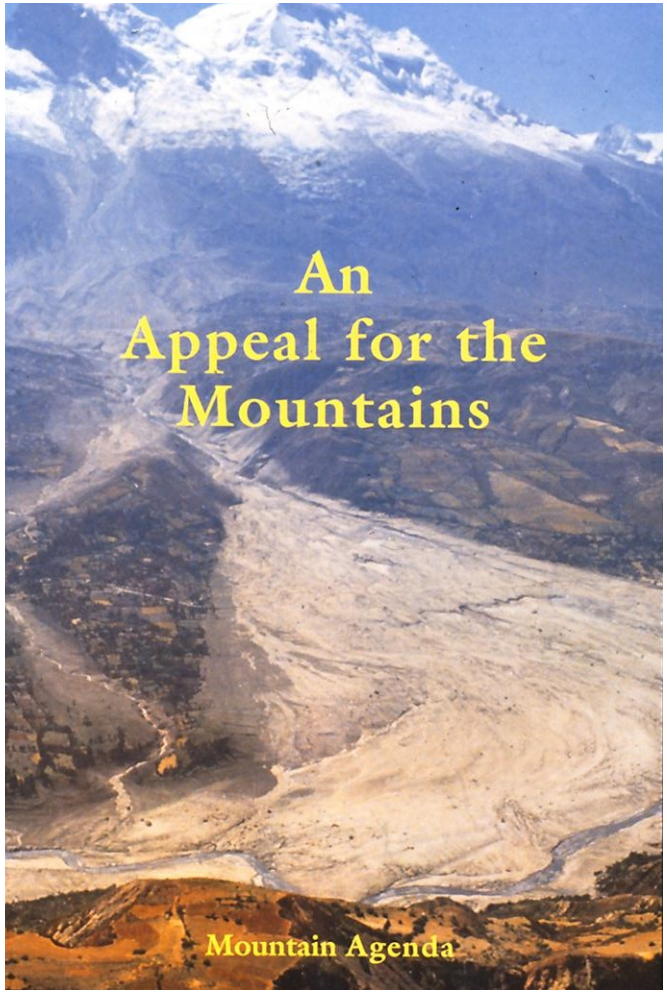
1986

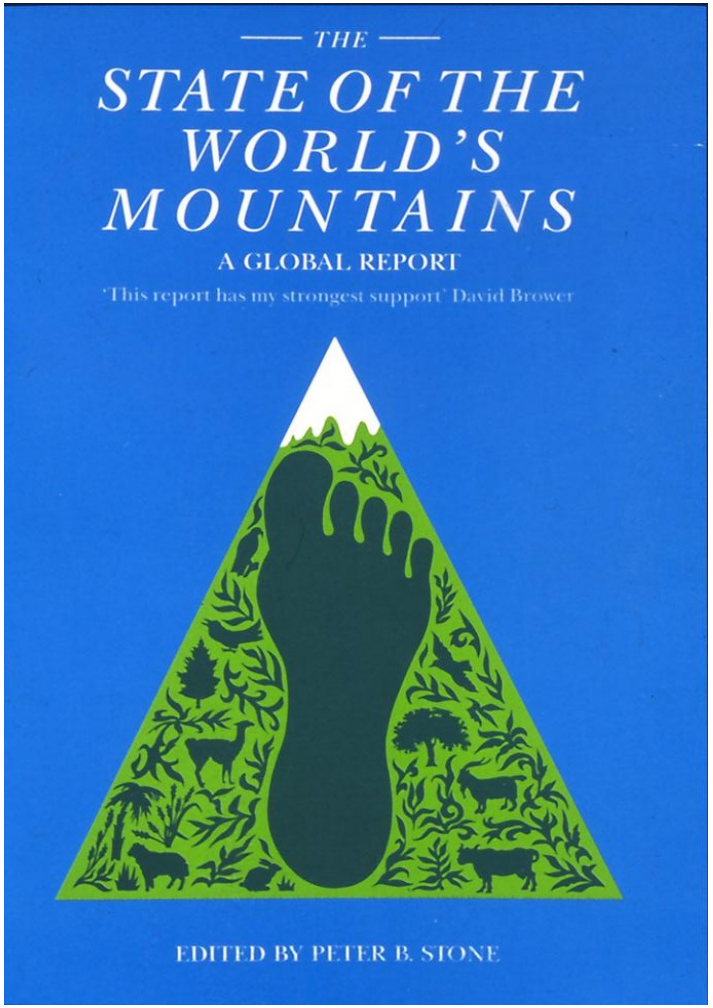
1989


THE
HIMALAYAN
DILEMMA
Reconciling development
and conservation
Jack D. Ives and Bruno Messerli

1991: Preparing for Rio

1992: Documents for Rio





1992: Rio Earth Summit

- “Mountains & upland areas cover some 20% of the surface of the earth”
- “10 per cent of the world's population depends on mountain resources”

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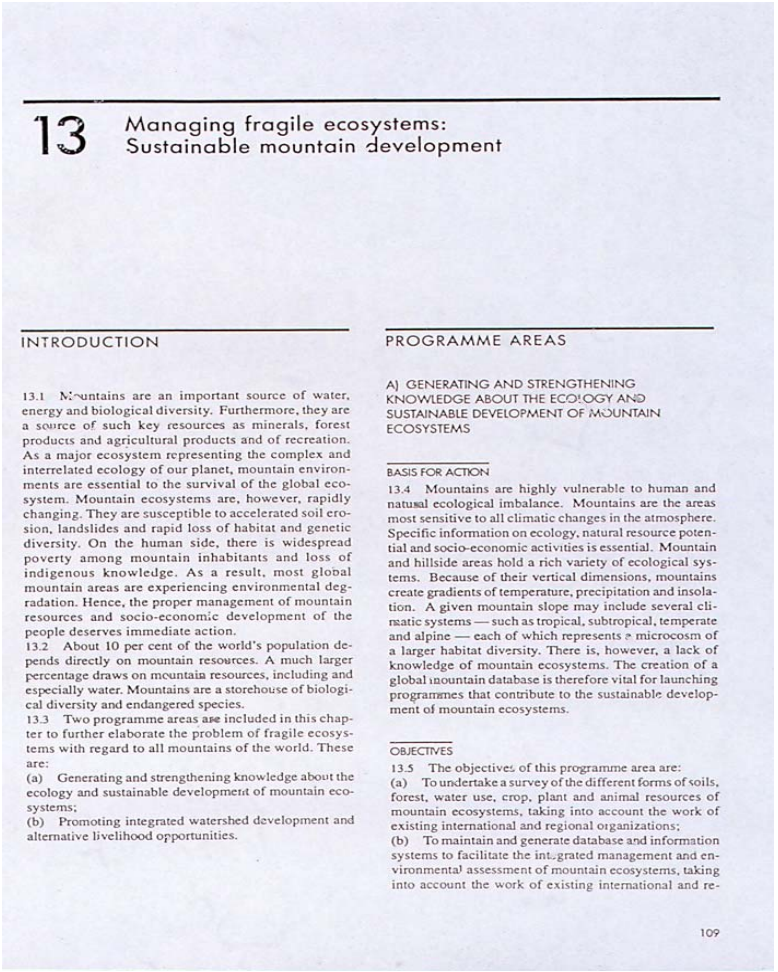


13 Managing fragile ecosystems: Sustainable mountain development

INTRODUCTION

13.1 Mountains are an important source of water, energy and biological diversity. Furthermore, they are a source of such key resources as minerals, forest products and agricultural products and of recreation. As a major ecosystem representing the complex and interrelated ecology of our planet, mountain environments are essential to the survival of the global ecosystem. Mountain ecosystems are, however, rapidly changing. They are susceptible to accelerated soil erosion, landslides and rapid loss of habitat and genetic diversity. On the human side, there is widespread poverty among mountain inhabitants and loss of indigenous knowledge. As a result, most global mountain areas are experiencing environmental degradation. Hence, the proper management of mountain resources and socio-economic development of the people deserves immediate action.

13.2 About 10 per cent of the world's population depends directly on mountain resources. A much larger percentage draws on mountain resources, including and especially water. Mountains are a storehouse of biological diversity and endangered species.

13.3 Two programme areas are included in this chapter to further elaborate the problem of fragile ecosystems with regard to all mountains of the world. These are:

(a) Generating and strengthening knowledge about the ecology and sustainable development of mountain ecosystems;

(b) Promoting integrated watershed development and alternative livelihood opportunities.

PROGRAMME AREAS

A) GENERATING AND STRENGTHENING KNOWLEDGE ABOUT THE ECOLOGY AND SUSTAINABLE DEVELOPMENT OF MOUNTAIN ECOSYSTEMS

BASIS FOR ACTION

13.4 Mountains are highly vulnerable to human and natural ecological imbalance. Mountains are the areas most sensitive to all climatic changes in the atmosphere. Specific information on ecology, natural resource potential and socio-economic activities is essential. Mountain and hillside areas hold a rich variety of ecological systems. Because of their vertical dimensions, mountains create gradients of temperature, precipitation and insolation. A given mountain slope may include several climatic systems — such as tropical, subtropical, temperate and alpine — each of which represents a microcosm of a larger habitat diversity. There is, however, a lack of knowledge of mountain ecosystems. The creation of a global mountain database is therefore vital for launching programmes that contribute to the sustainable development of mountain ecosystems.

OBJECTIVES

13.5 The objectives of this programme area are:

(a) To undertake a survey of the different forms of soils, forest, water use, crop, plant and animal resources of mountain ecosystems, taking into account the work of existing international and regional organizations;

(b) To maintain and generate database and information systems to facilitate the integrated management and environmental assessment of mountain ecosystems, taking into account the work of existing international and re-

109

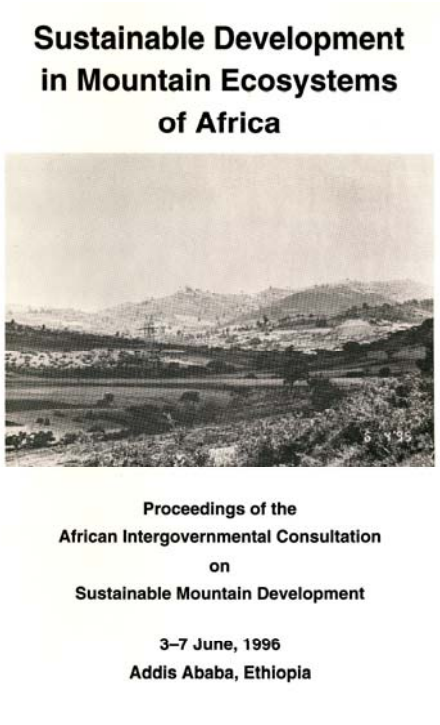
1993

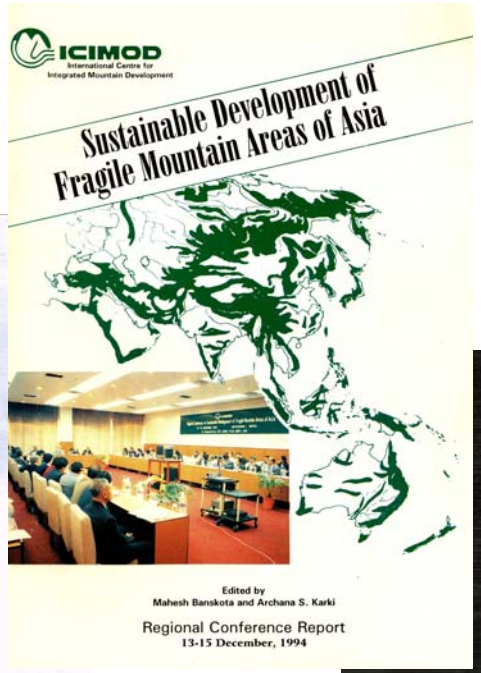
Ad-hoc interagency network on Chapter 13

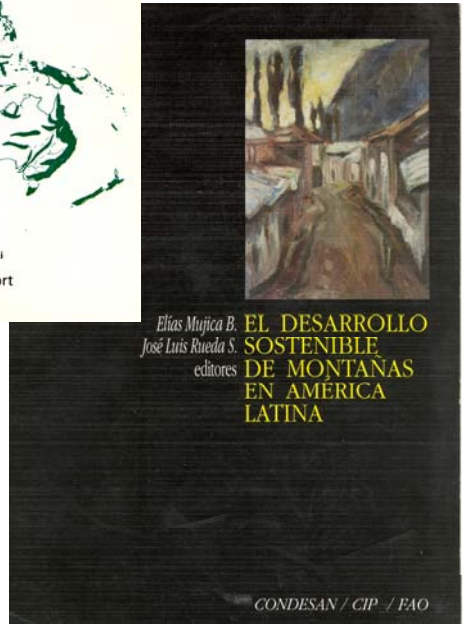
1994 – 1996 (1): Inter-governmental consultations

62 countries +

European Union



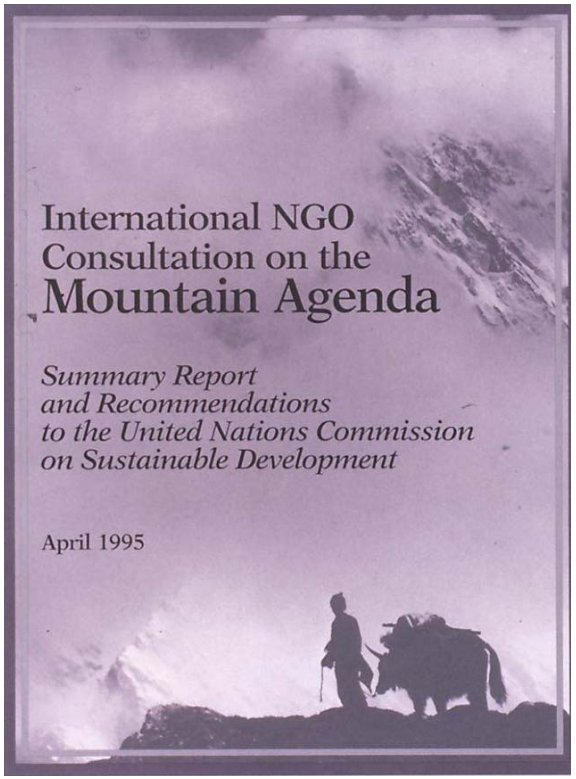




1994 – 1996 (2): Non-governmental consultations

1994 Dehra Dun, India

1995



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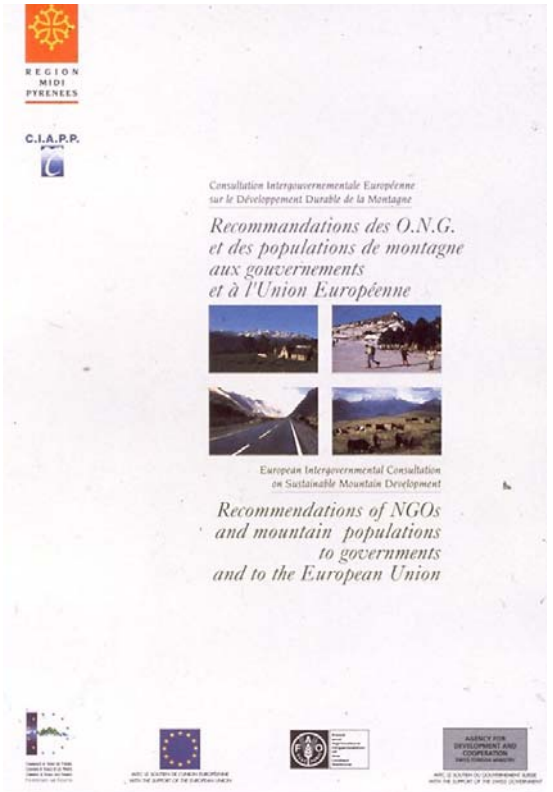
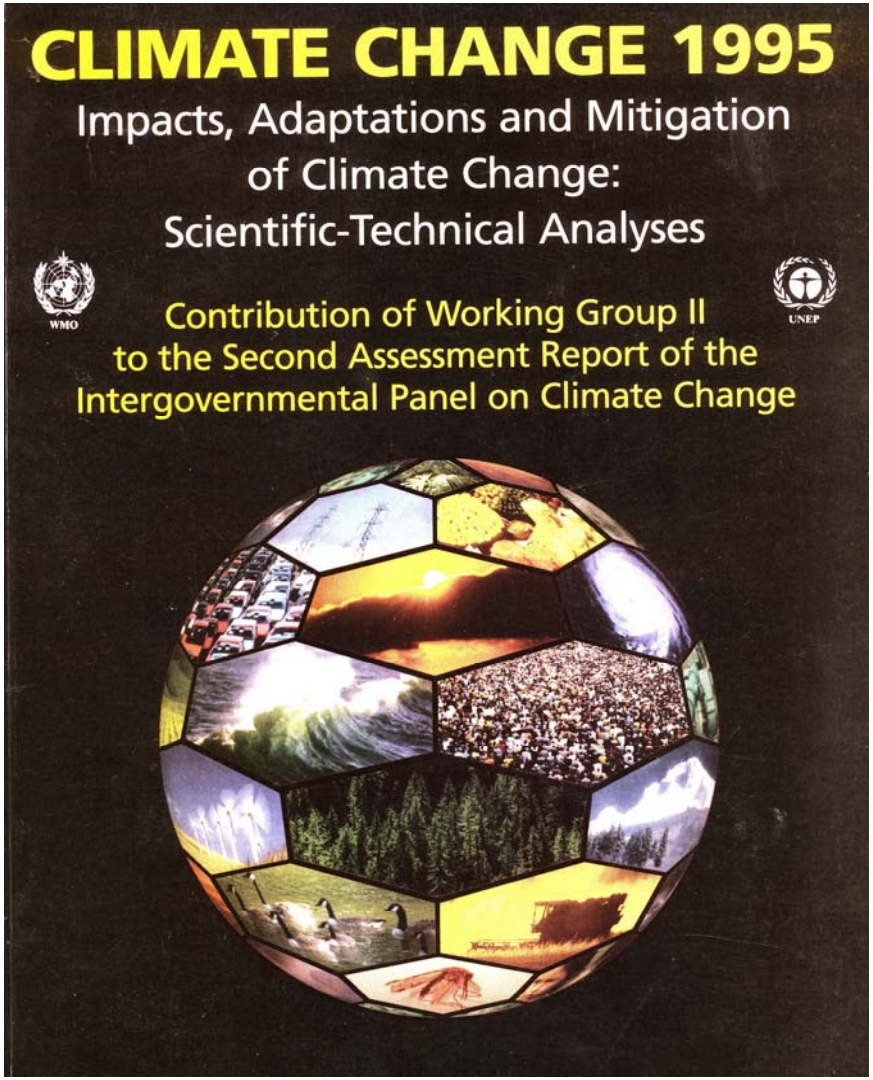


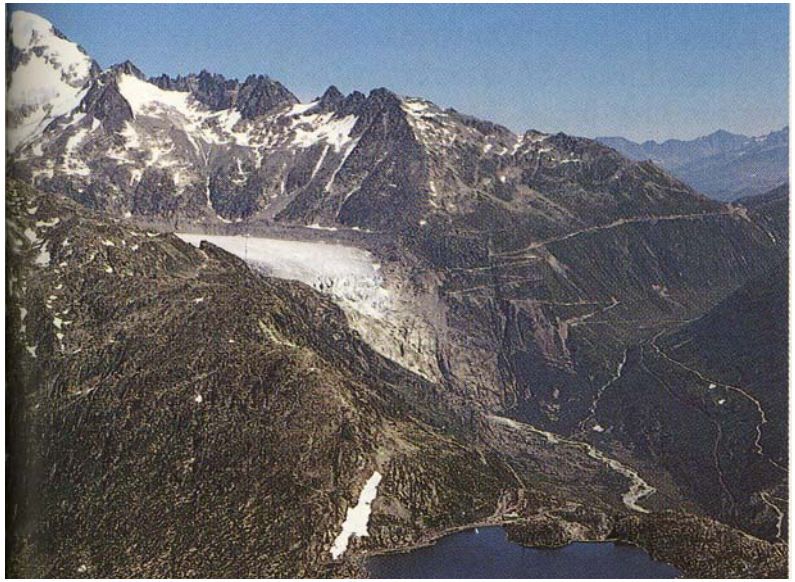
1996 : Climate change



Climate change

1806

1973



Climate change

1993

2000

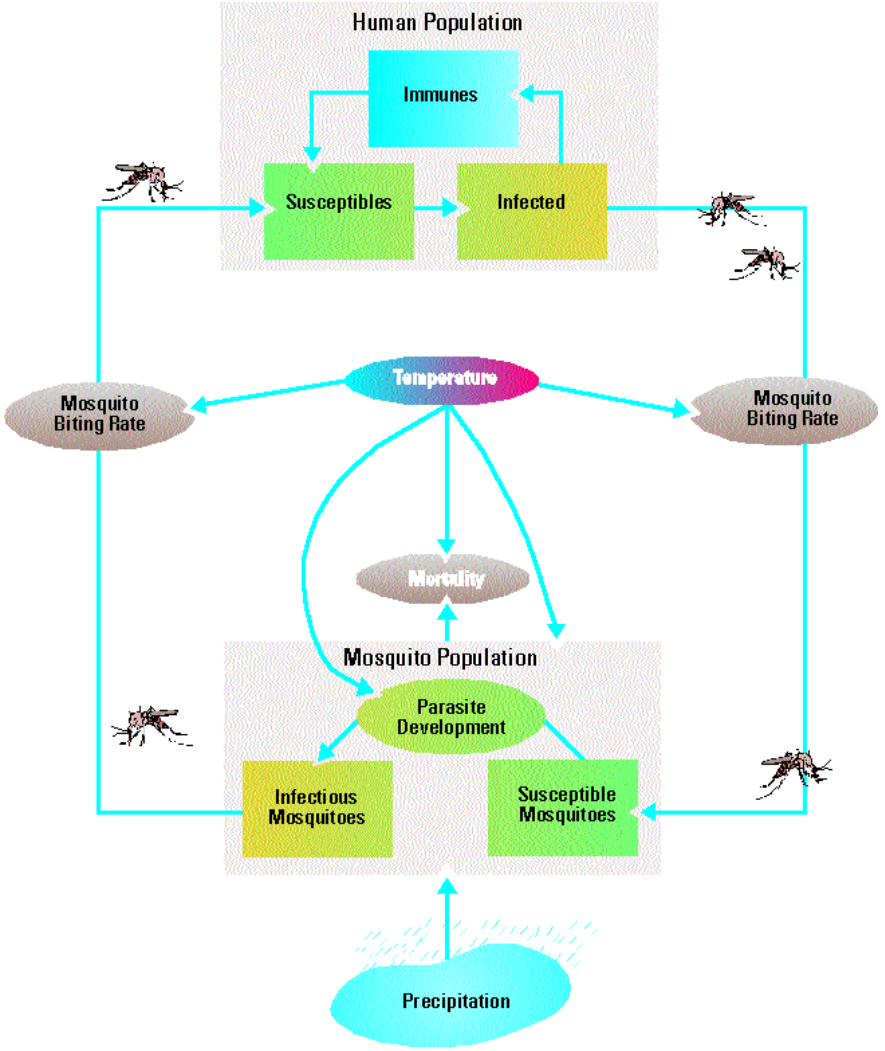
Climate change

Climate change

Climate change

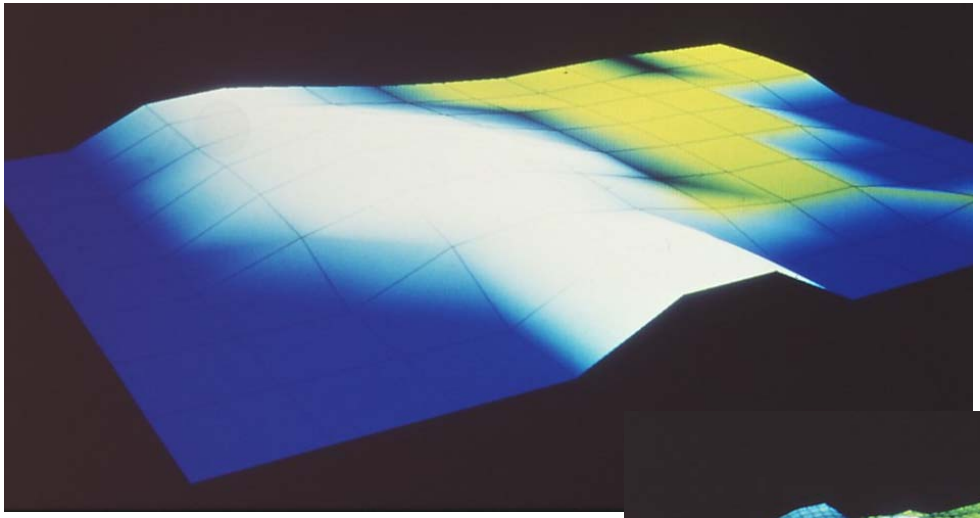
Climate change

Climate change



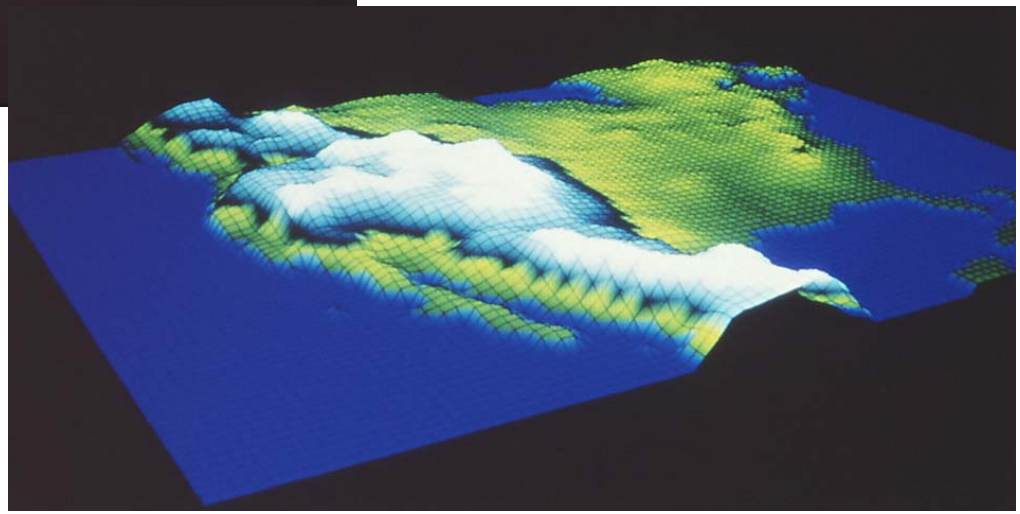
Climate change

Climate change



60 km

480 km



Climate change

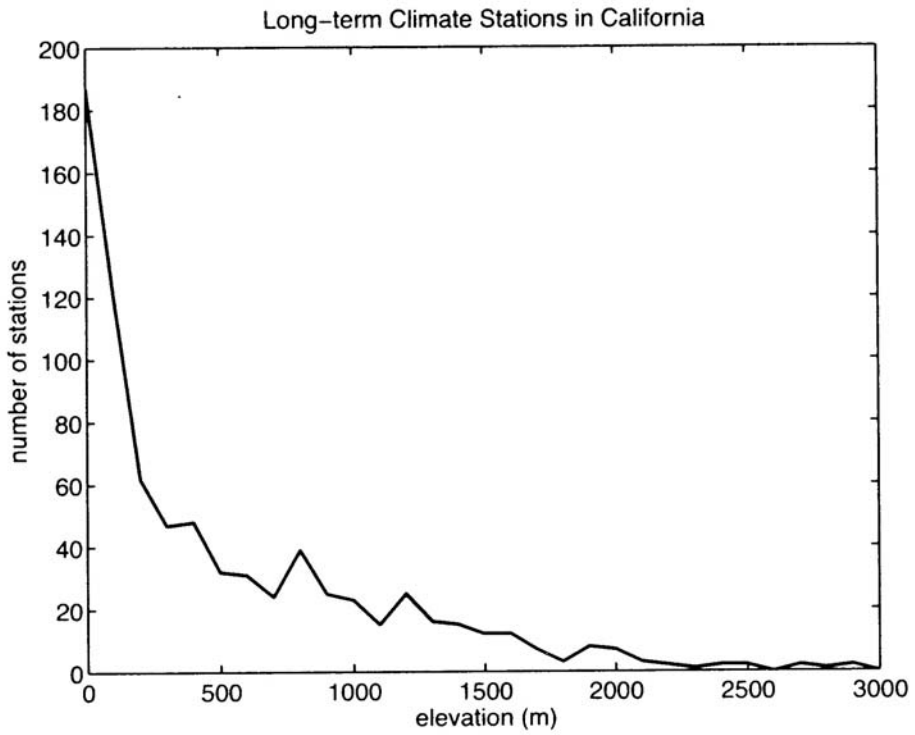
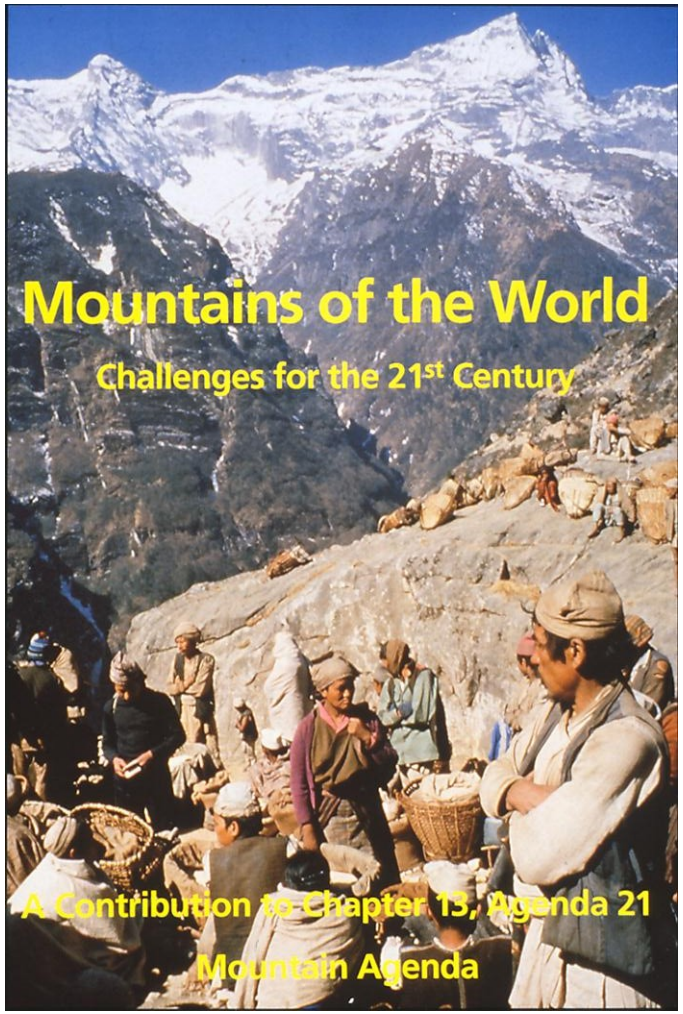
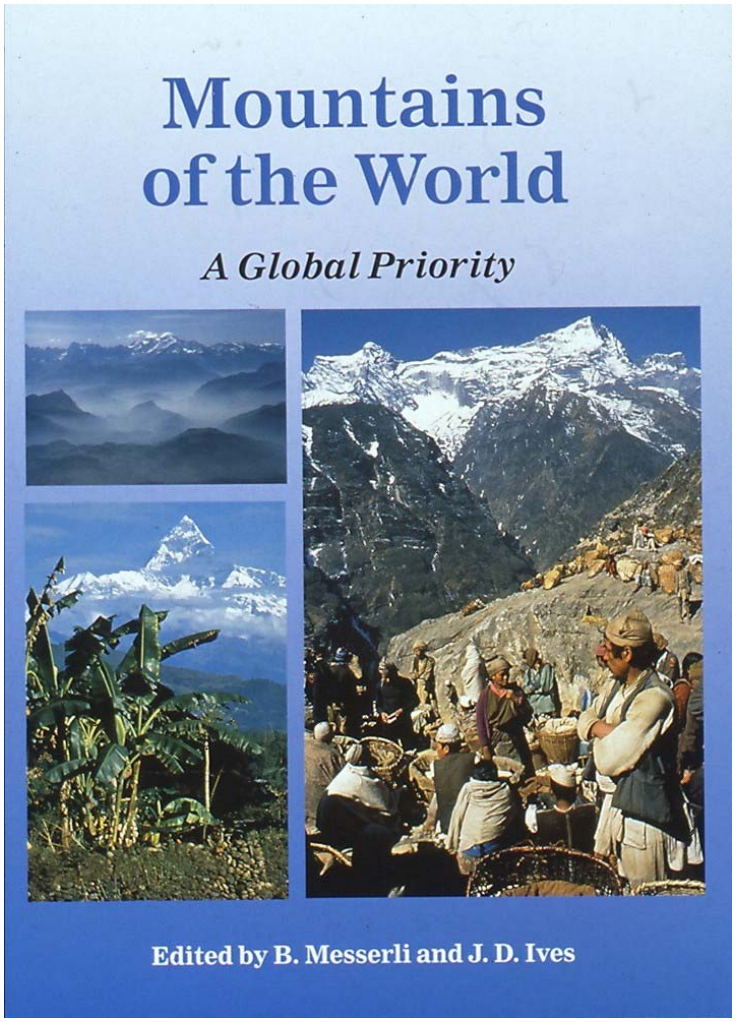


Fig. 1. Number of long-term climate stations in each 100 m elevation band in California. Or two stations, operated by the White Mountain Research Center, exist above 3000 m.

1997: Rio + 5


Mountains of the World
Challenges for the 21st Century
A Contribution to Chapter 13, Agenda 21
Mountain Agenda

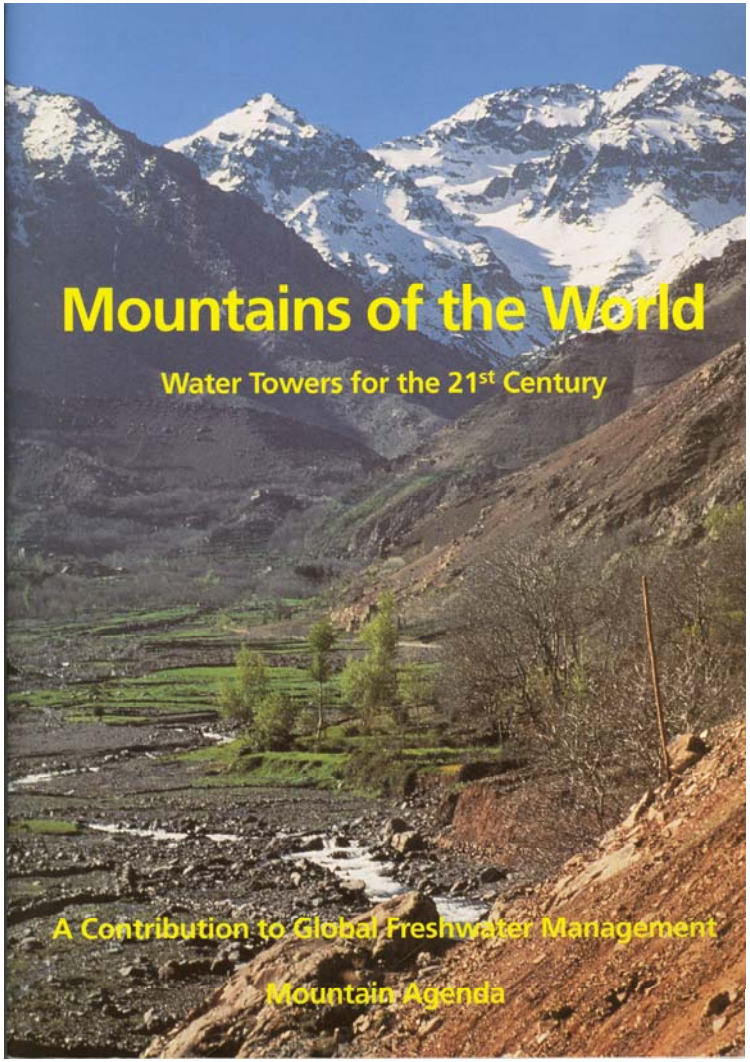

Mountains of the World
A Global Priority
Edited by B. Messerli and J. D. Ives

1998: UN General Assembly

Resolution for an International Year of Mountains

- Sponsored by 130 countries

1998 : Mountain water @ CSD



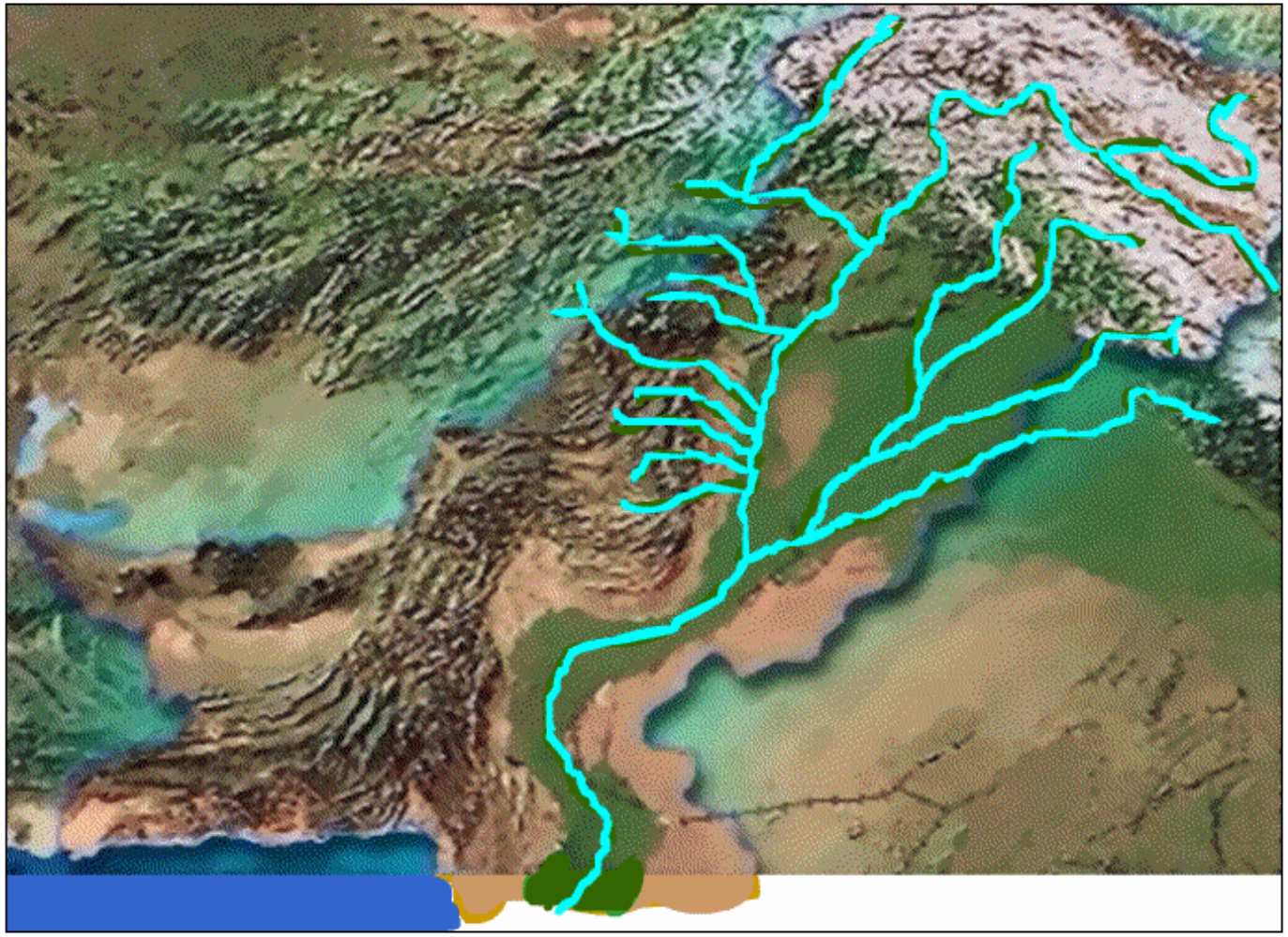
Mountain water

Mountain water

Mountain water

Mountain water

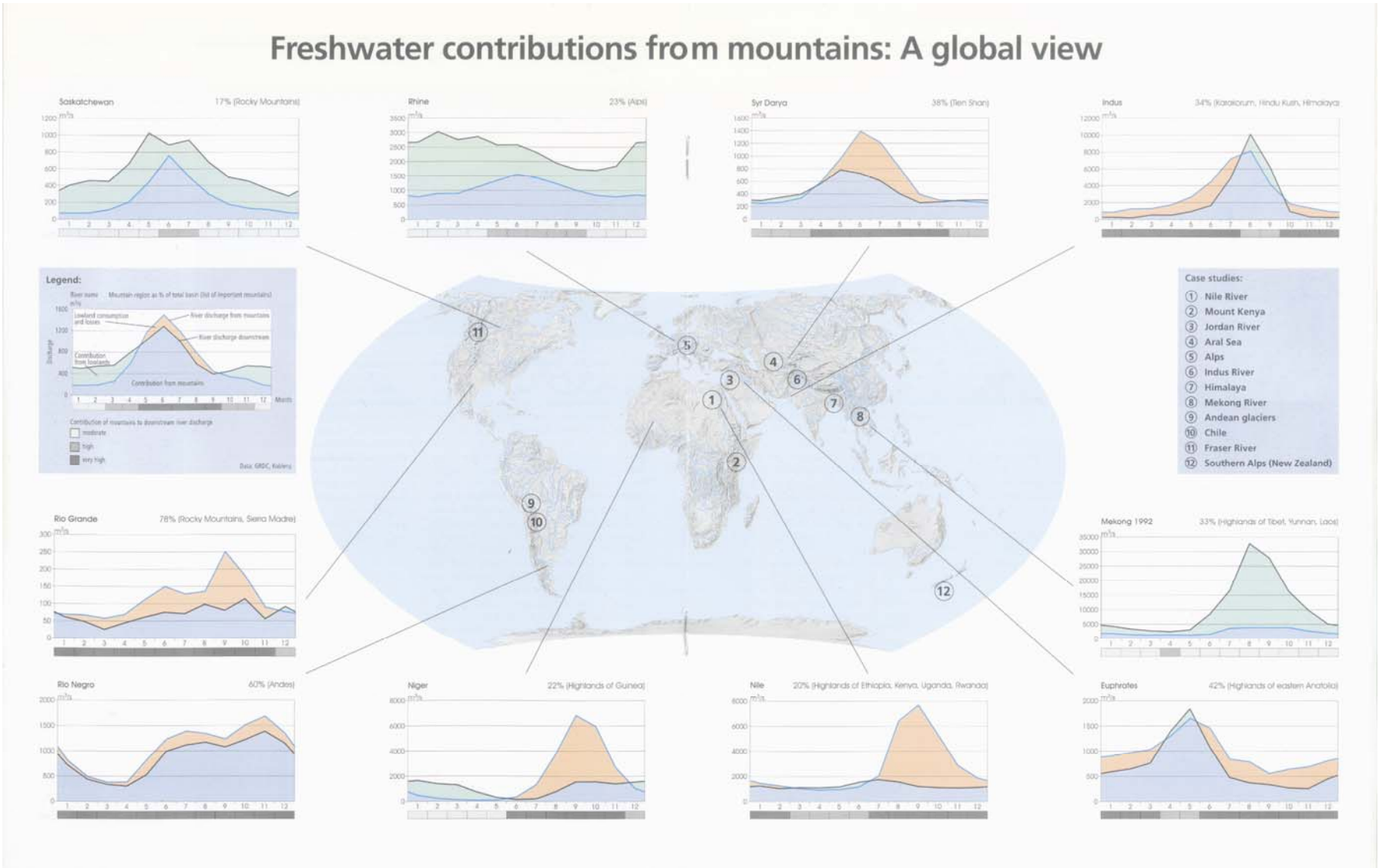
Mountain water



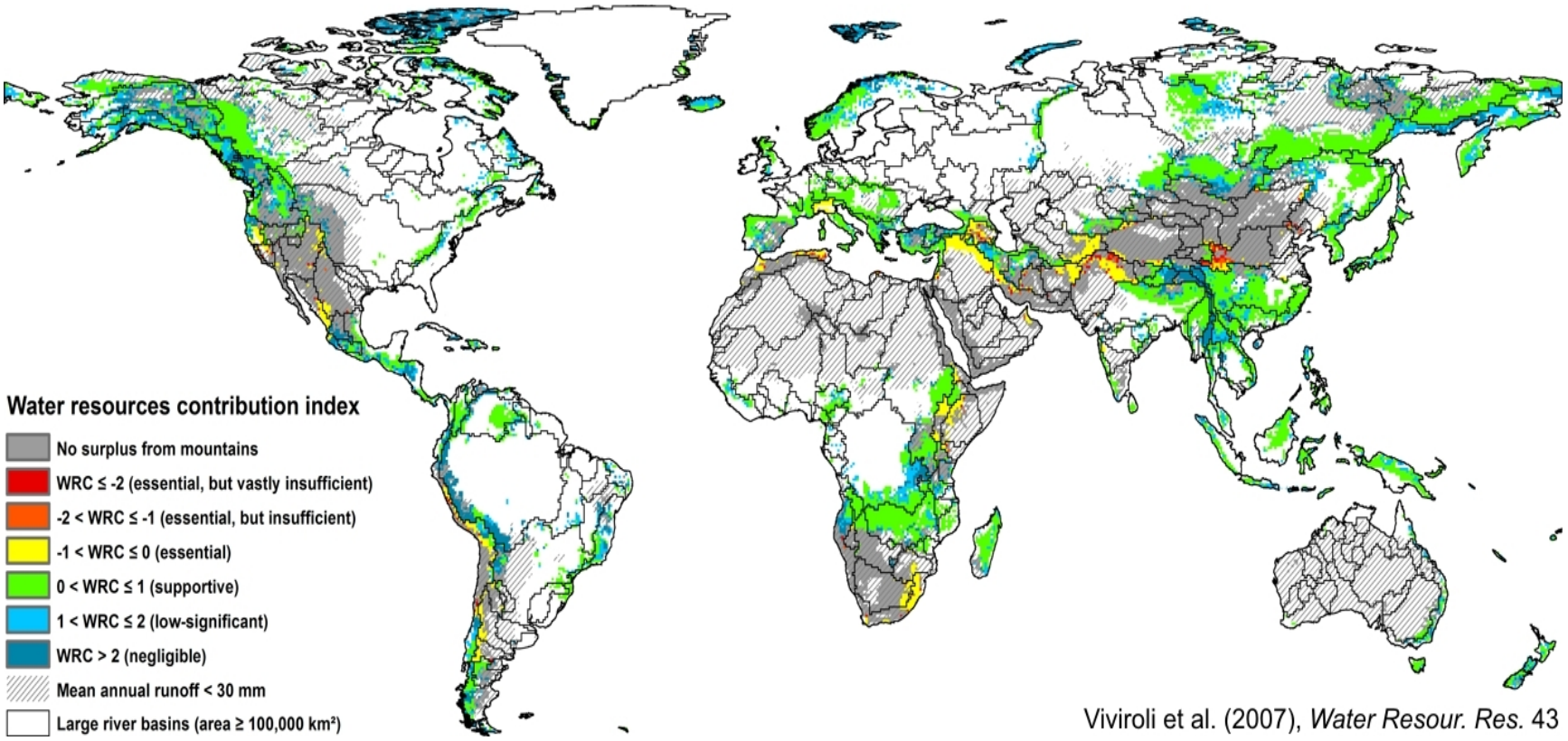
Mountain water

Mountain water

Mountain water

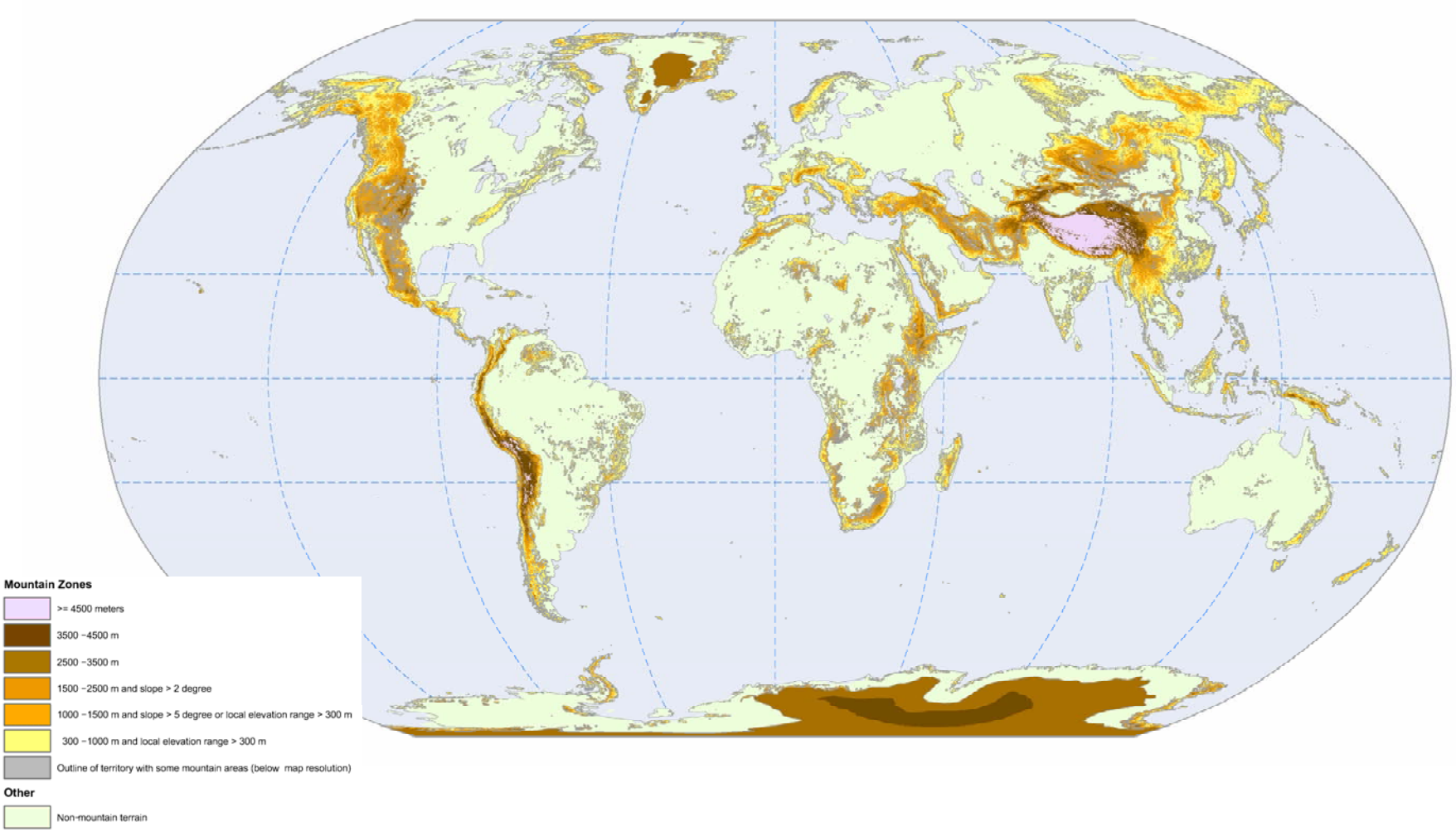


Mountain water



Viviroli et al. (2007), *Water Resour. Res.* 43

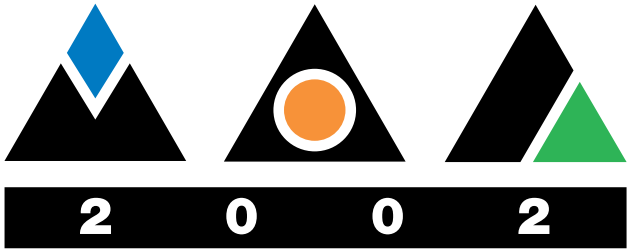
2000:
24% of the Earth's land surface



2001, 2003: Mountain people

- 26% in and around mountains
  (Meybeck et al., 2001)
- 12% in mountains (FAO, 2003)

2002



International Year of MOUNTAINS

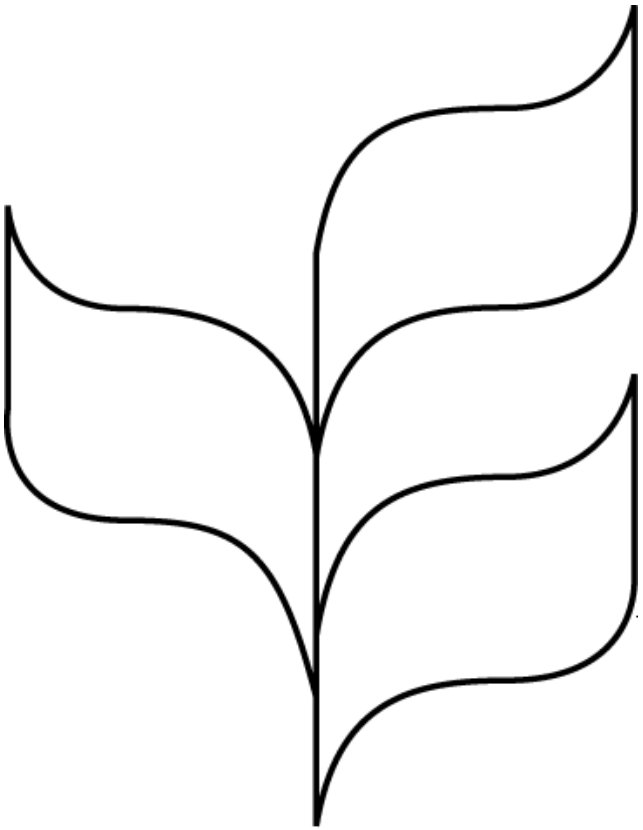
We are all mountain people

www.mountains2002.org

- 78 countries with national committees
- National and regional events & initiatives
- Global meetings

2002: World Summit on Sustainable Development

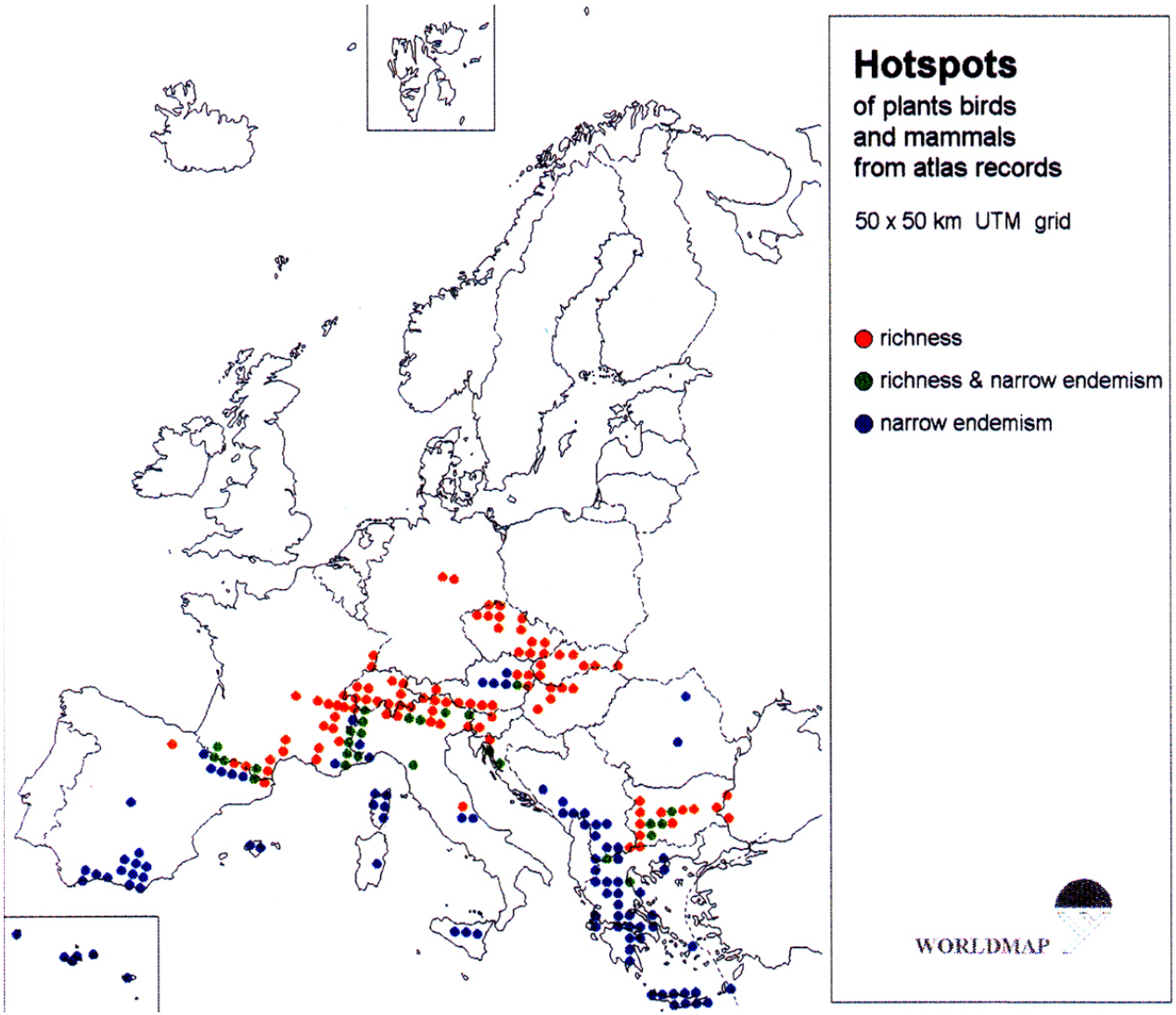
2004 : Biodiversity



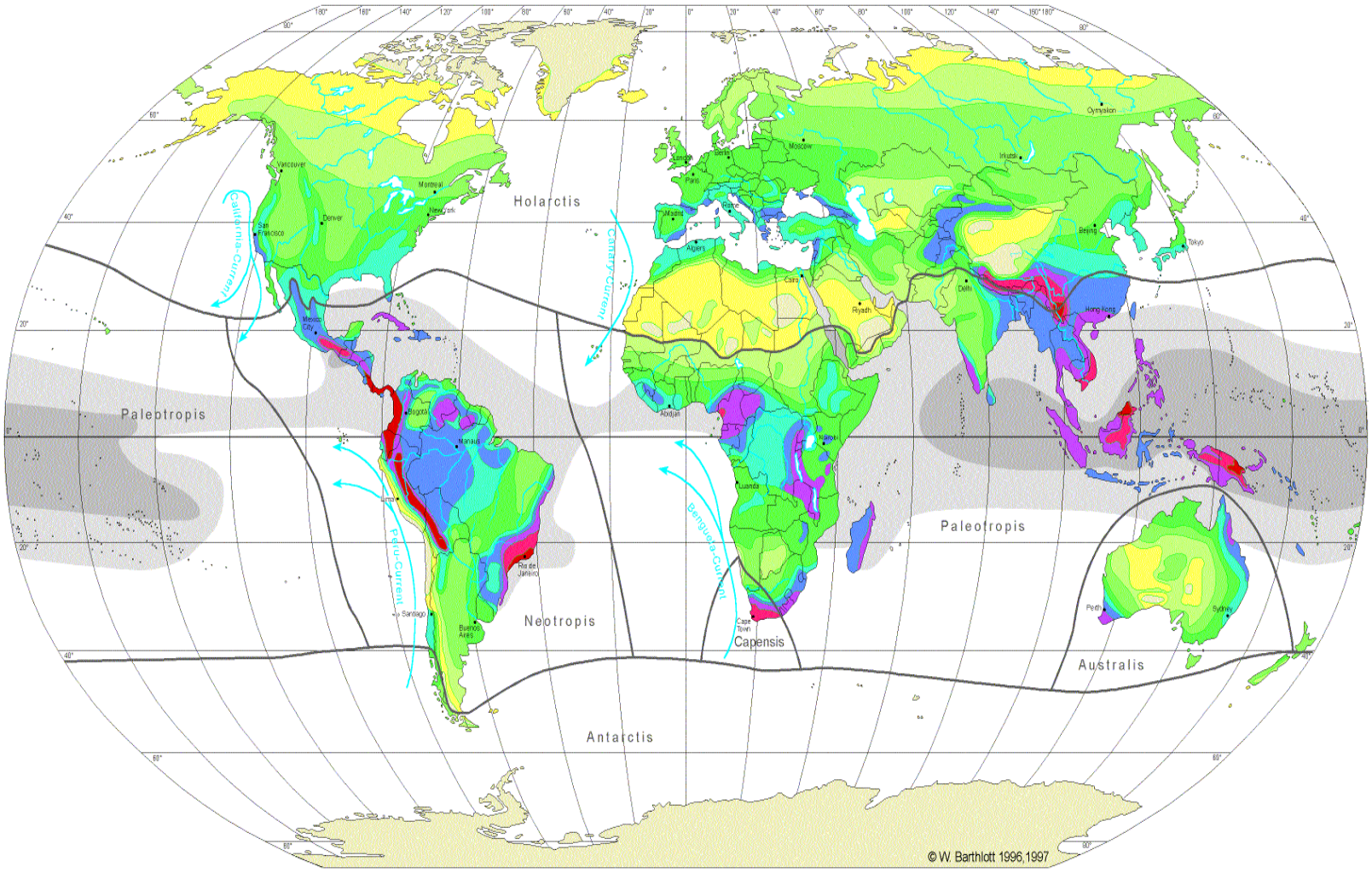
CBD

Programme of work on mountain biodiversity

Biodiversity



Biodiversity



Biodiversity

Biodiversity

Biodiversity

Biodiversity

Biodiversity

Biodiversity

Biodiversity

2005:
Millennium Ecosystem Assessment

2005:
Millennium Ecosystem Assessment

- Half of the human population depends on mountains
- Mountains are characterized by high biodiversity
- Mountain ecosystems are exceptionally fragile

…

Millennium Ecosystem Assessment

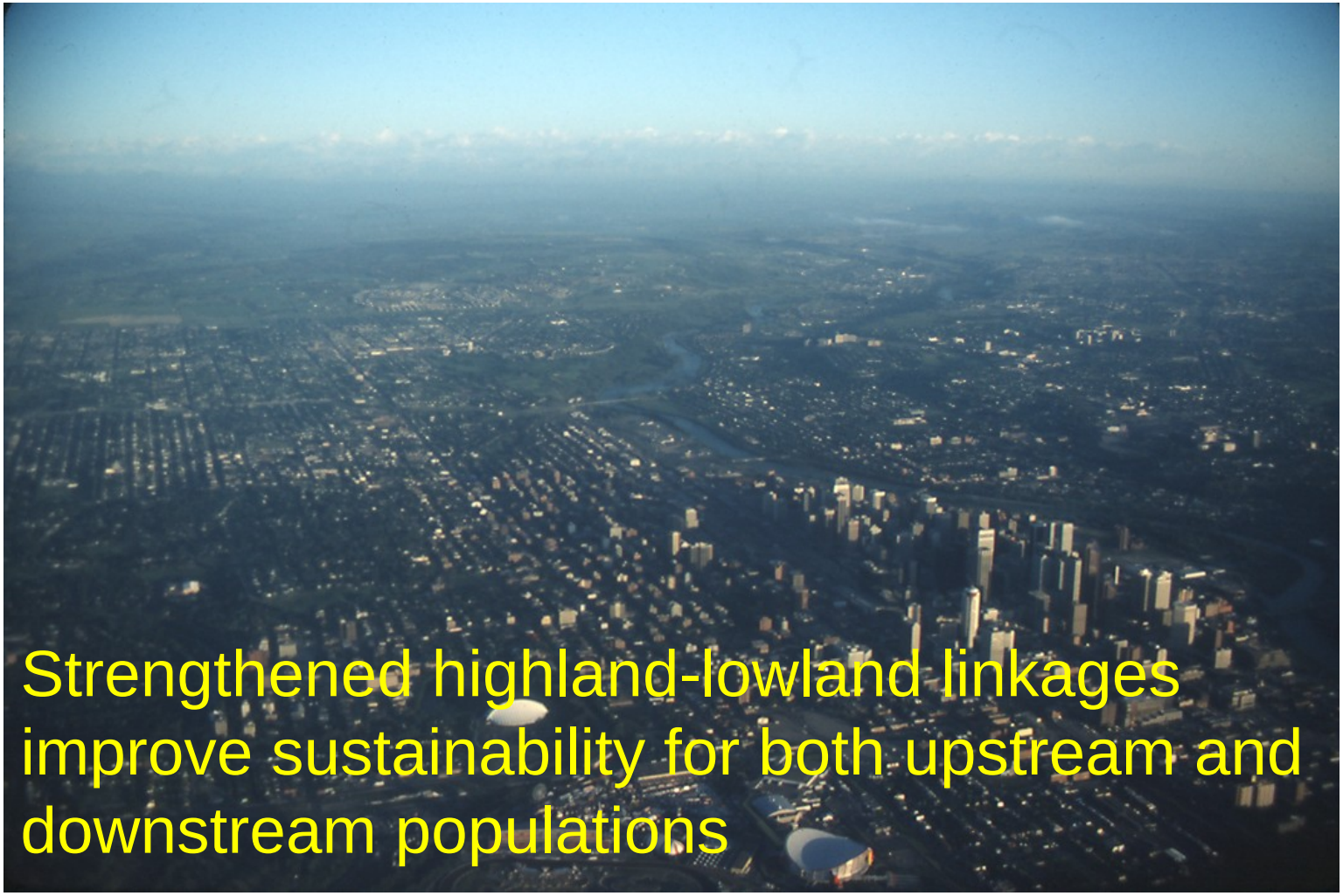
Millennium Ecosystem Assessment

Millennium Ecosystem Assessment

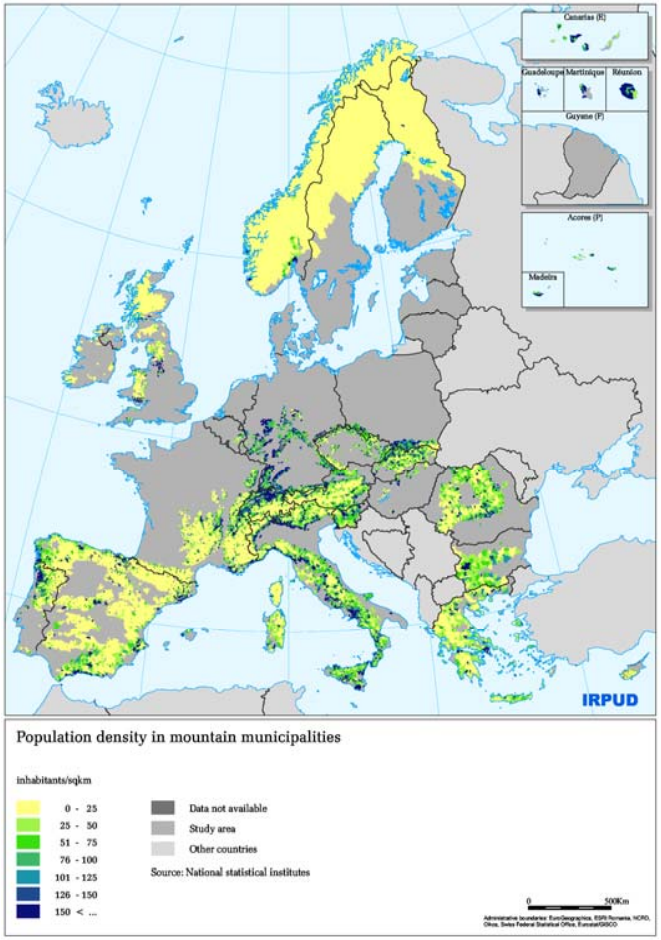
Millennium Ecosystem Assessment

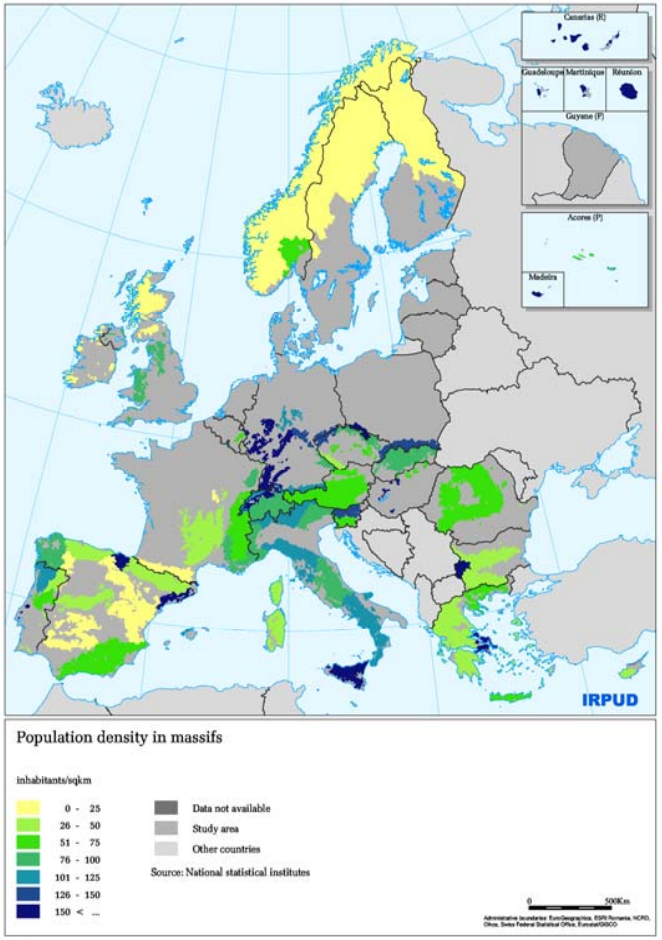
Millennium Ecosystem Assessment

Millennium Ecosystem Assessment



Millennium Ecosystem Assessment





2008: UN General Assembly

New resolution supporting sustainable mountain development


A Mountain vision of ecosystem goods and services
Providing ideas, practices and knowledge
Storing and releasing water
Maintaining culture, religion and spirituality
Providing sources of energy
Maintaining aesthetics and landscapes
Protecting flora and fauna
Maintaining social interactions
Storing creativity and wisdom
Yang Jiaoke, KIB-CAS, China
ICIMOD
An Initiative of the International Centre for Integrated Mountain Development with its Partners

Thanks to:
Douglas Cook
Steffie El Hassan
Jan Esper
FAO
ICIMOD
International Potato Centre
Dave Morris
Roger Payne
Daniel Viviroli