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Human Migration – Geopolitical Conflicts - Climate Security

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**Climate Change Impacts on Migration:
Conflict and Cooperation in the Mediterranean**



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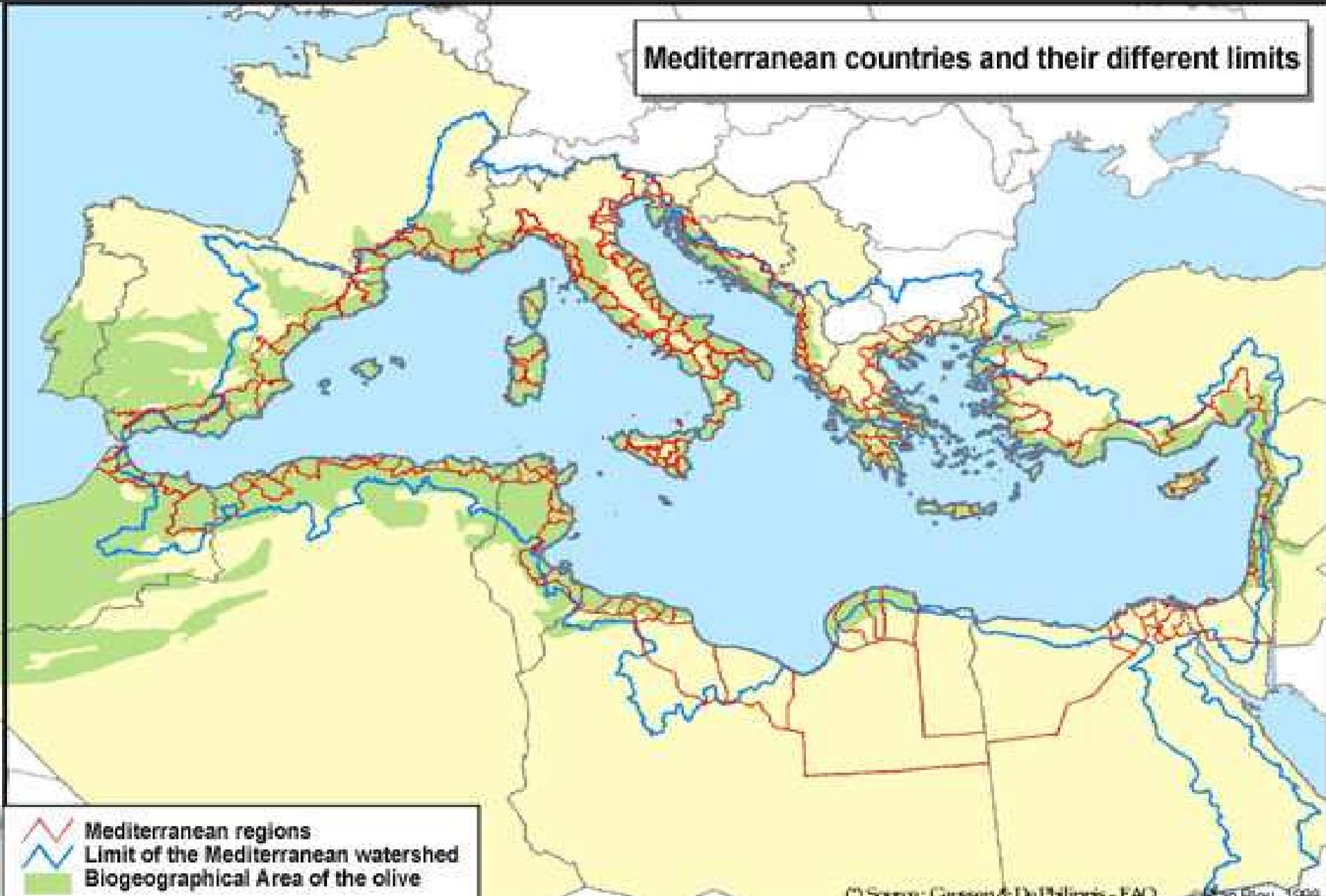
Introduction:

Focus and Research Questions

- ◆ **Mediterranean: region of migration, cooperation & conflict.**
 - Impact of natural climate variability have during past millennia ?
 - Consequences of anthropogenic climate change on cooperation & conflict during the 21st century in the Euro-Mediterranean region?
- ◆ **This paper is based on:**
 - climate history impacts on migration streams in the Mediterranean
 - models & impacts of IPCC for climate regimes in the 21st century;
 - climate change impacts on migration in MENA cause, trigger or multiplier.
- ◆ **The analysis is based on**
 - conceptual policy analyses on climate change impacts for BMU & WBGU
 - migration analyses on the Mediterranean.
- ◆ **Perspective of sustainability science and aimed at sustainable peace this talk aims at**
 - **proactive policies addressing the cause (climate change)**
 - instead of reactive militarized policies of the containment of migration streams with military means and those of justice and home affairs.

The Mediterranean & MENA Region

Mediterranean countries and their different limits



Legend:
- Mediterranean regions (red line)
- Limit of the Mediterranean watershed (blue line)
- Biogeographical Area of the olive (green area)

Climate Change: Cause, Trigger and Multiplier of Human Migration

During **Holocene**, *natural climate variability contributed*

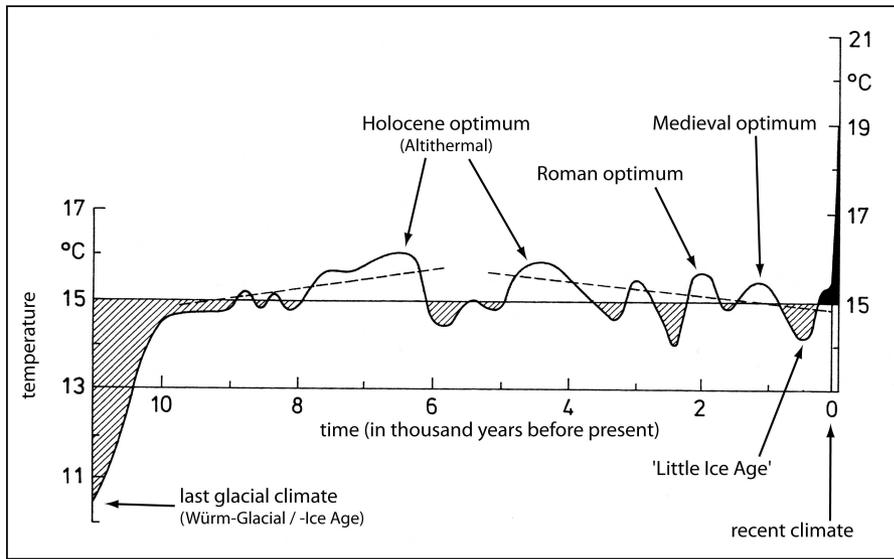
- ◆ to decline of civilizations (Mesopotamia, Egypt, Asia Minor (Turkey) and of Roman Empire
- ◆ to migration from Central Asia (Huns, Mongols) and Northern Europe (Goths, Vandals, Vikings) to Mediterranean (dispute among climate historians).

During **Anthropocene** (since 1750) greenhouse gas concentration in atmosphere increased

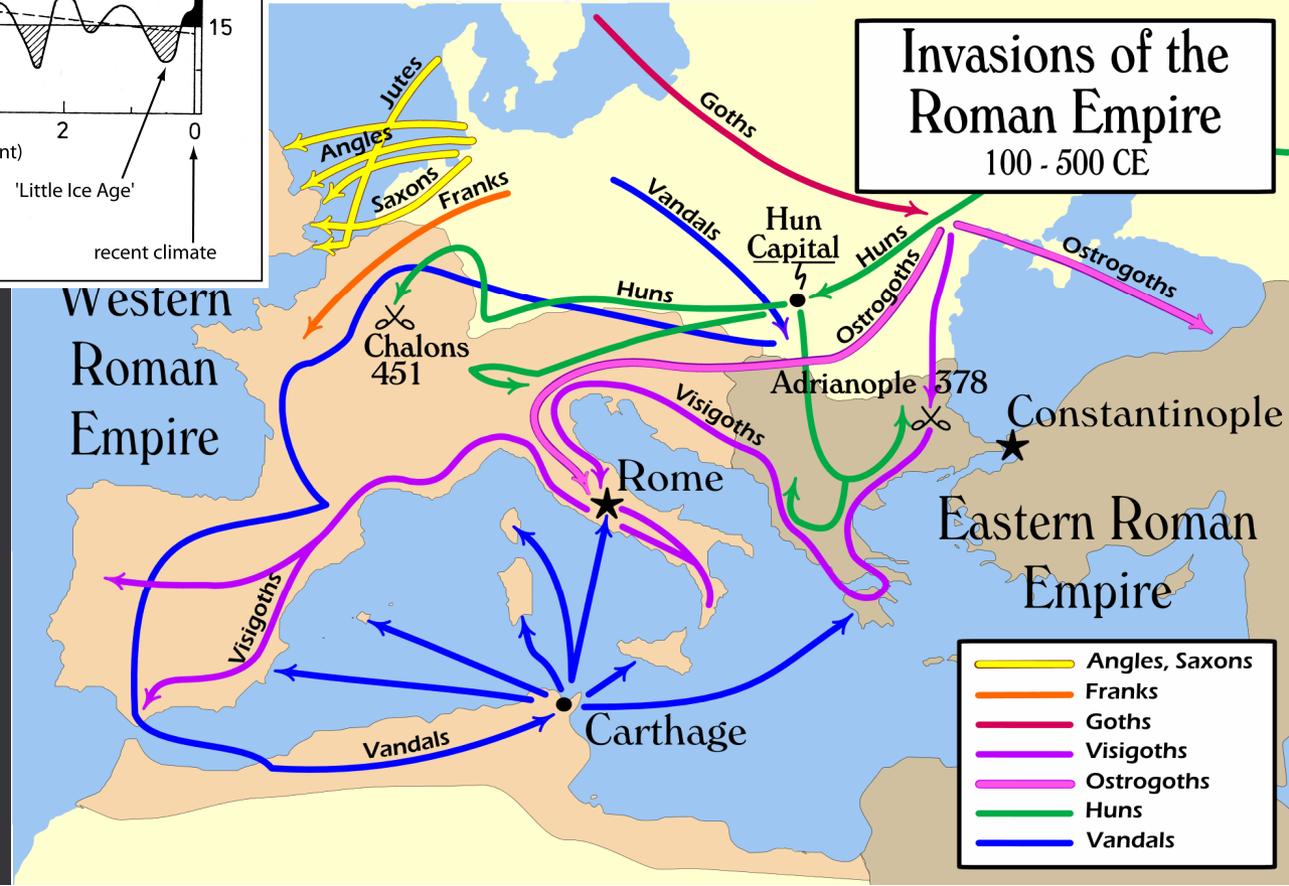
- ◆ from 280 ppm (1750) to 379 ppm (2005). to 387 ppm (2008), 2/3 of increase occurred since 1958.
- ◆ The projected increase until 2100 for six scenarios is according to the Synthesis Report of the IPCC's AR4 "about 600, 700, 850, 1250 & 1550 ppm respectively."

Impacts of Climate Variability in the Holocene to the Anthropocene (since 1750)

End of Roman Empire: massive people's movements : 1st phase, 300-500 AD, Germanic, Turkish & other peoples.



During **Holocene** era both **climate pessima** (cold periods) and **changes in precipitation patterns** and long periods of **drought** were major triggers for **several phases of massive people's movements**:



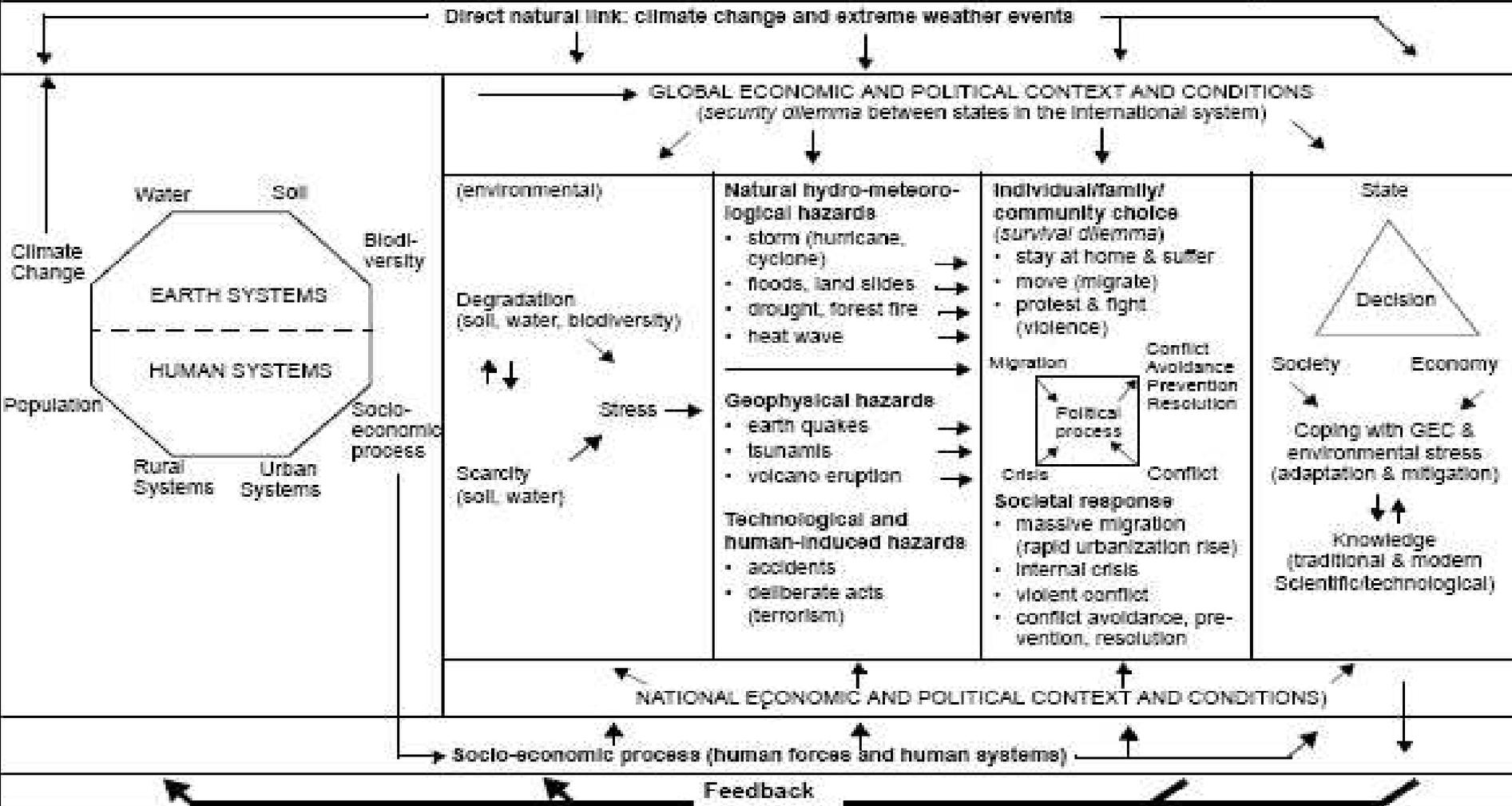
Climate Change, Conflicts and Collapse of Civilizations

- ◆ **Natural climate variability -> longer periods of drought & famine caused sudden collapse of high civilizations**
- ◆ **Complex interrelation: cultural & environmental factors:**
 - 5,500 BP, Late Uruk society in southern Mesopotamia. Expansion of Late Uruk society collapsed (5200 – 5000 BP) possibly due to a short but severe drought.
 - Collapse of the Mycenaean kingdom,
 - Hittite Empire in Anatolia and Syria
 - Egyptian Empire (3206-3150 BP).
- ◆ **Persisted drought: caused collapse of civilizations**

PEISOR-Model.

Source: Brauch/Oswald, UNCCD (2009)

Pressure	Effect	Impact	Societal Outcome	(Policy) Response
Causes of Global Environmental Change (GEC)	Socio-economic Interaction Environmental scarcity, degradation and stress	Natural and human-induced hazards	Individual choice (survival dilemma) Societal response	National and international political process, state, societal and economic actors and knowledge



Focus: Climate Change and Migration

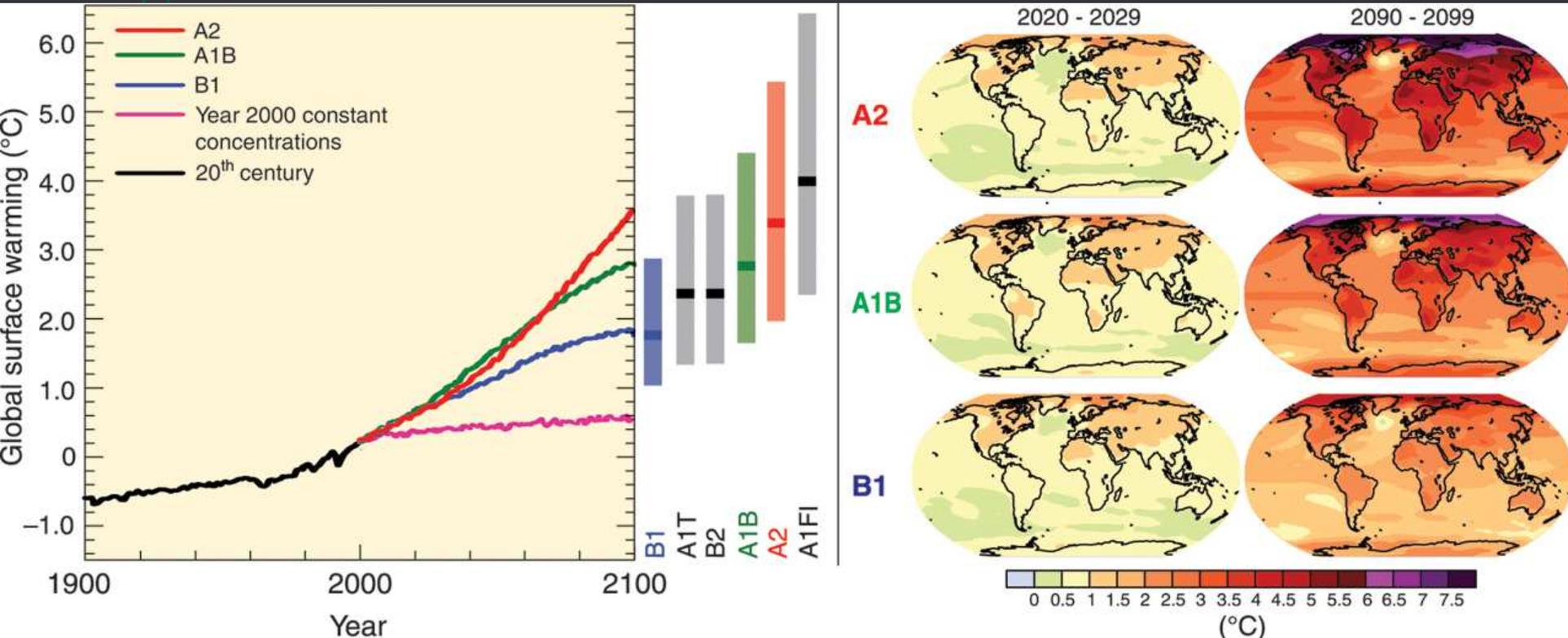
◆ Earth System: Climate change: 4 direct effects

- Temperature increase
- Sea-level rise
- Precipitation change
- Increase in hydro-meteorological hazards

◆ Human System

- **E: effects: env. scarcity, degradation & stress**
- **I: impacts: hydro-meteorological hazards**
- **SO: Societal Outcome; migration & conflicts**
- **R: Policy Response: from reactive to proactive strategies, policies and measures**

Anthropogenic Climate Change in the Anthropocene (1900-2100)



◆ Three temperature increase regimes:

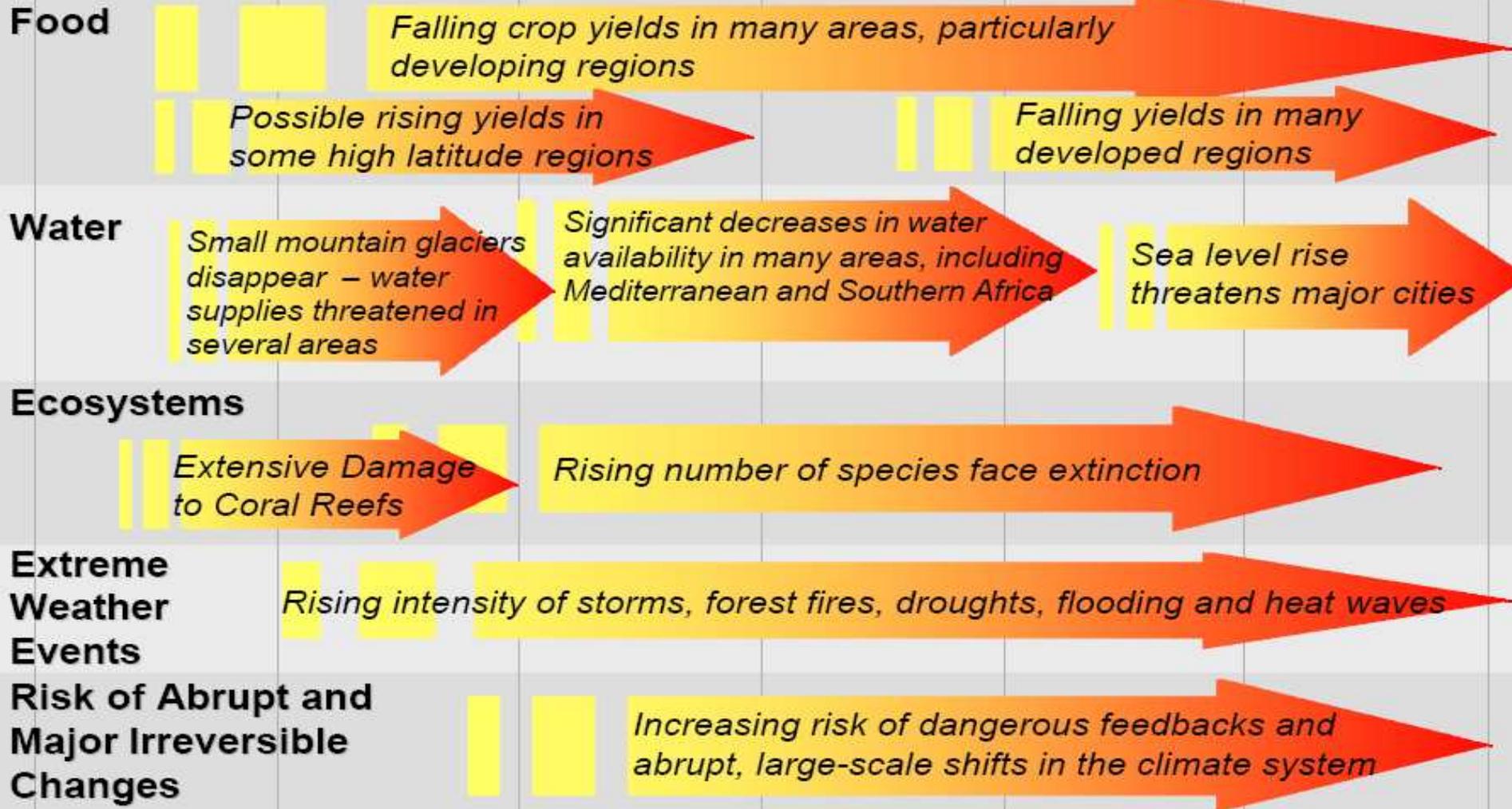
- +2°C: virtually certain: EU stabilization goal
- +4°C: probable if no immediate stabilization measures are taken!
- +6°C: possible under business as usual scen. (catastrophic scenario)

Possible Impacts of temperature Increases

Projected Impacts of Climate Change

Global temperature change (relative to pre-industrial)

0°C 1°C 2°C 3°C 4°C 5°C

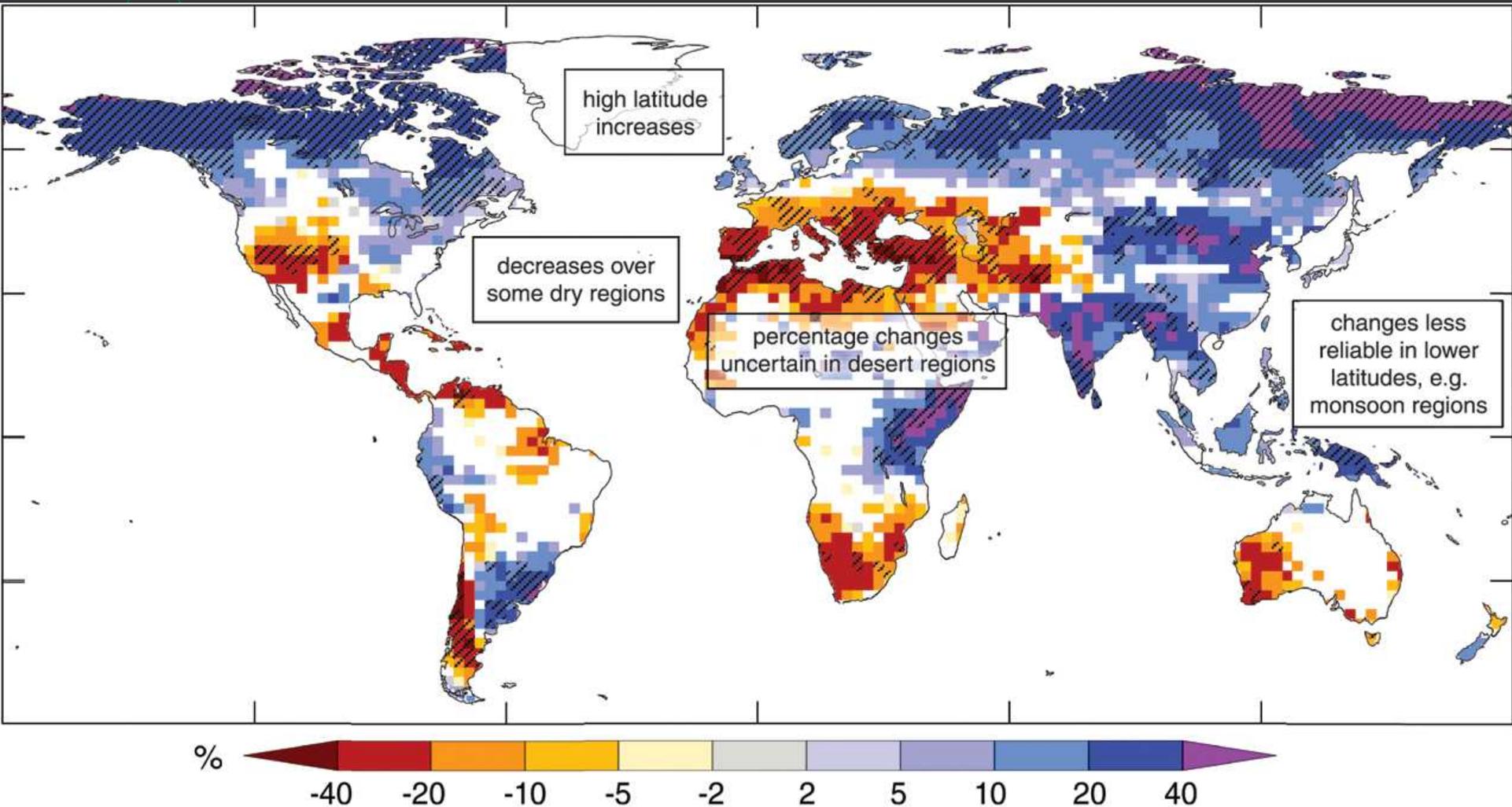


Projected Sealevel Rise (Pachauri, 2008)

Stabilization level (ppm CO ₂ -eq)	Global mean temp. increase (°C)	Year CO ₂ needs to peak	Global sea level rise above pre-industrial from thermal expansion (m)
445 – 490	2.0 – 2.4	2000 – 2015	0.4 – 1.4
490 – 535	2.4 – 2.8	2000 – 2020	0.5 – 1.7
535 – 590	2.8 – 3.2	2010 – 2030	0.6 – 1.9
590 – 710	3.2 – 4.0	2020 – 2060	0.6 – 2.4

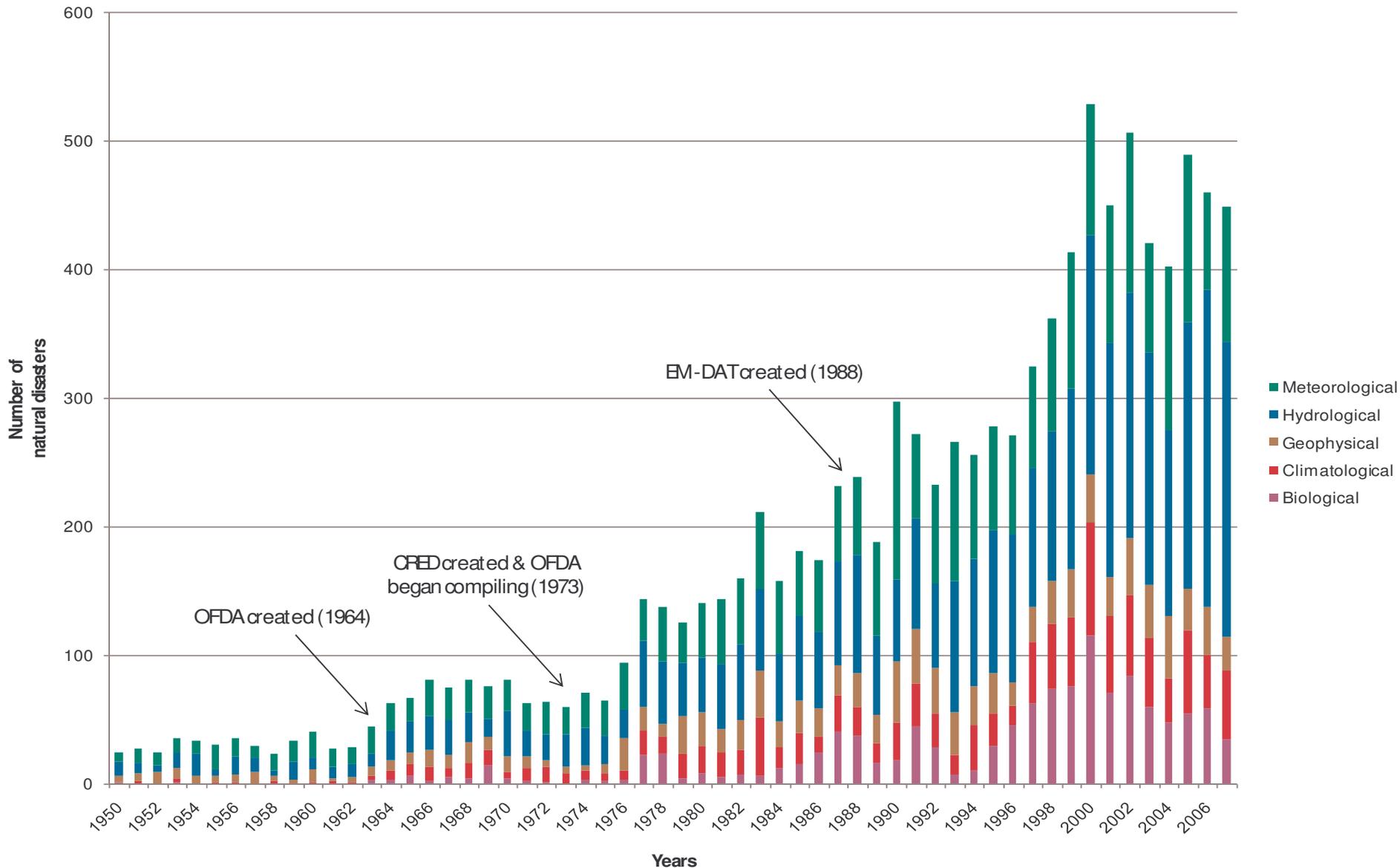
Precipitation Change by 2100:

Projections and model consistency of relative changes in runoff by the end of the 21st century

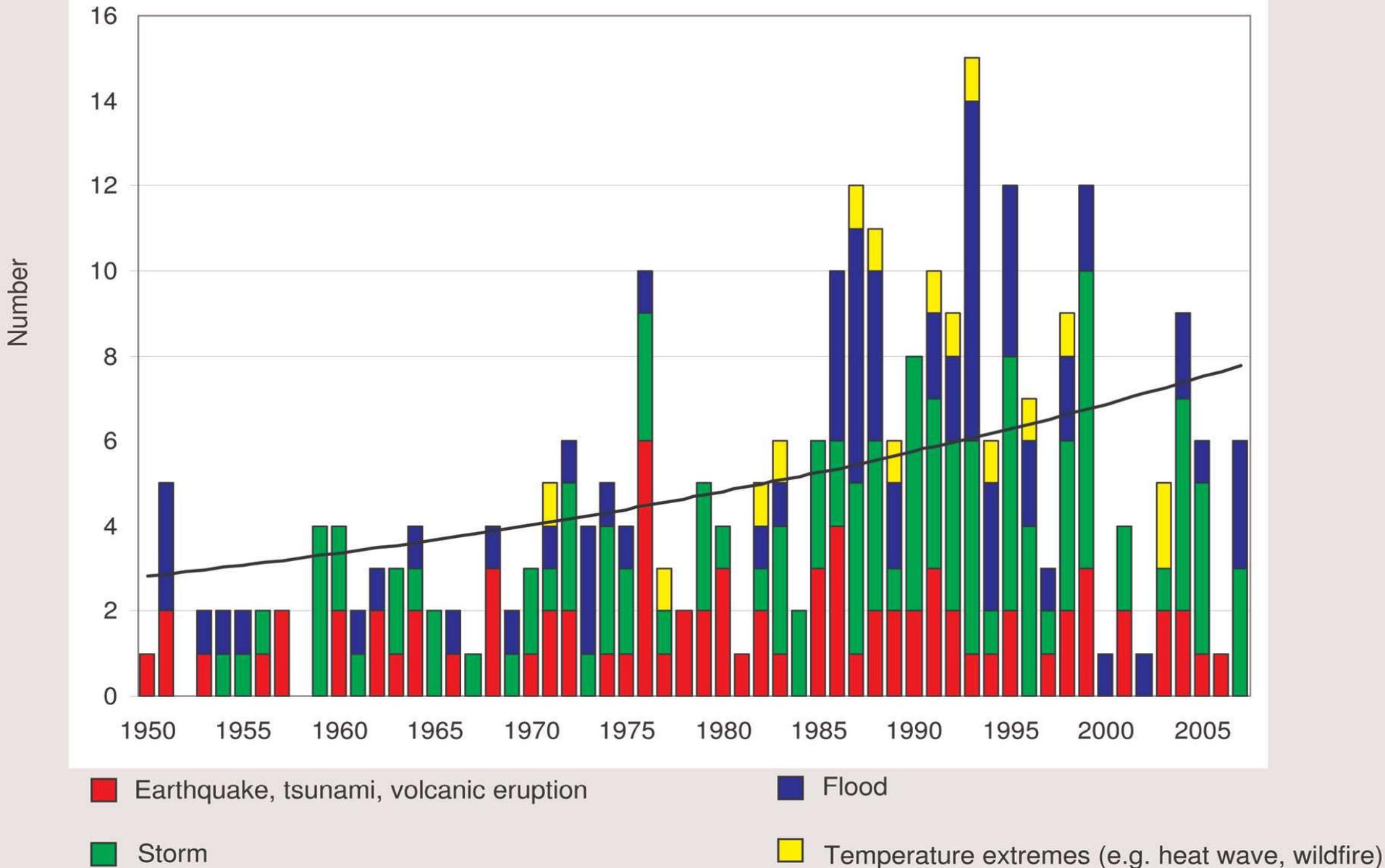


Change in hydro-meteorological hazards.

Source: Guha-Sapir (2010)

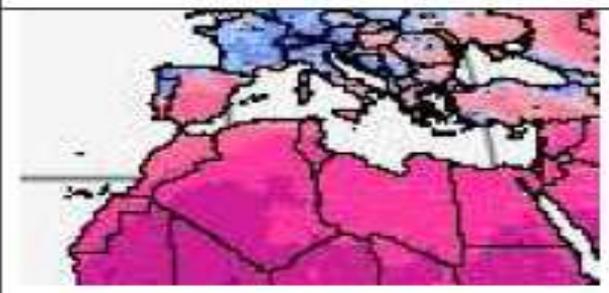


Natural hazards (1950-2006). MunichRe

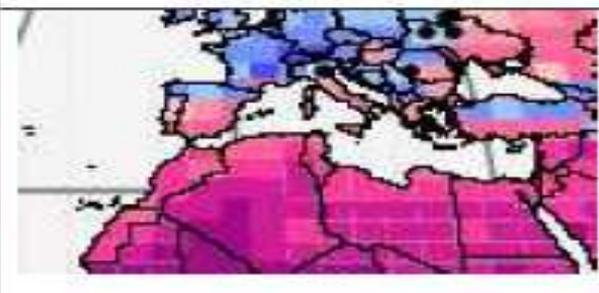


Potential Danger of Drought (WBGU 2006)

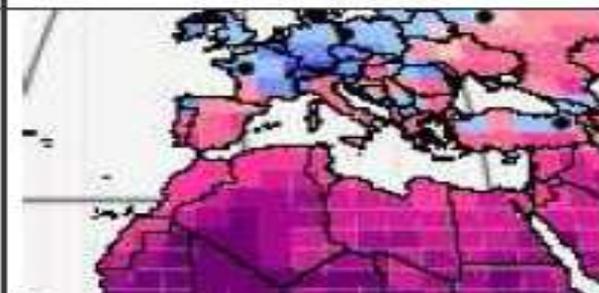
4A: Potential danger of drought by country, 1975-2004 (observations) (Climatic water balance)



4B: Potential danger of drought by country, 2050 (2040-2069) (Climatic water balance)

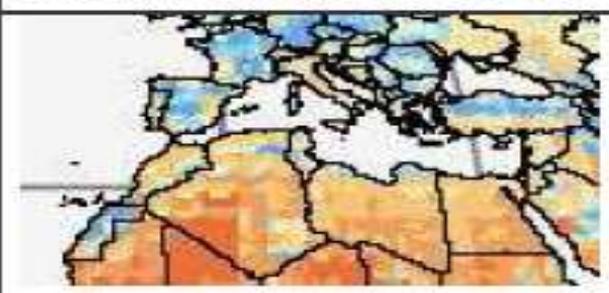


4C: Potential danger of drought by country, 2080 (2070-2099) (Climatic water balance)



Wachstumsföhrung von humid zu arid

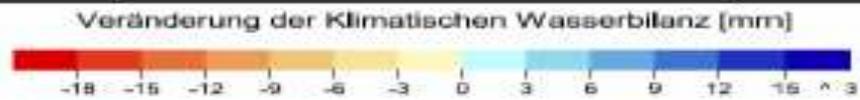
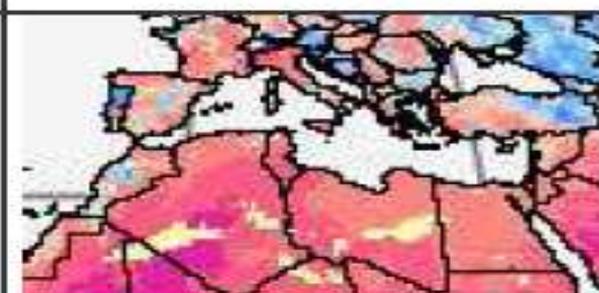
4D: Potential danger of drought by country, difference between 2040/2069 and 1975/2004, changes in climatic water balance



4E: Potential danger of drought by country, difference between 2070/2099 and 2040/2069, changes in climatic water balance

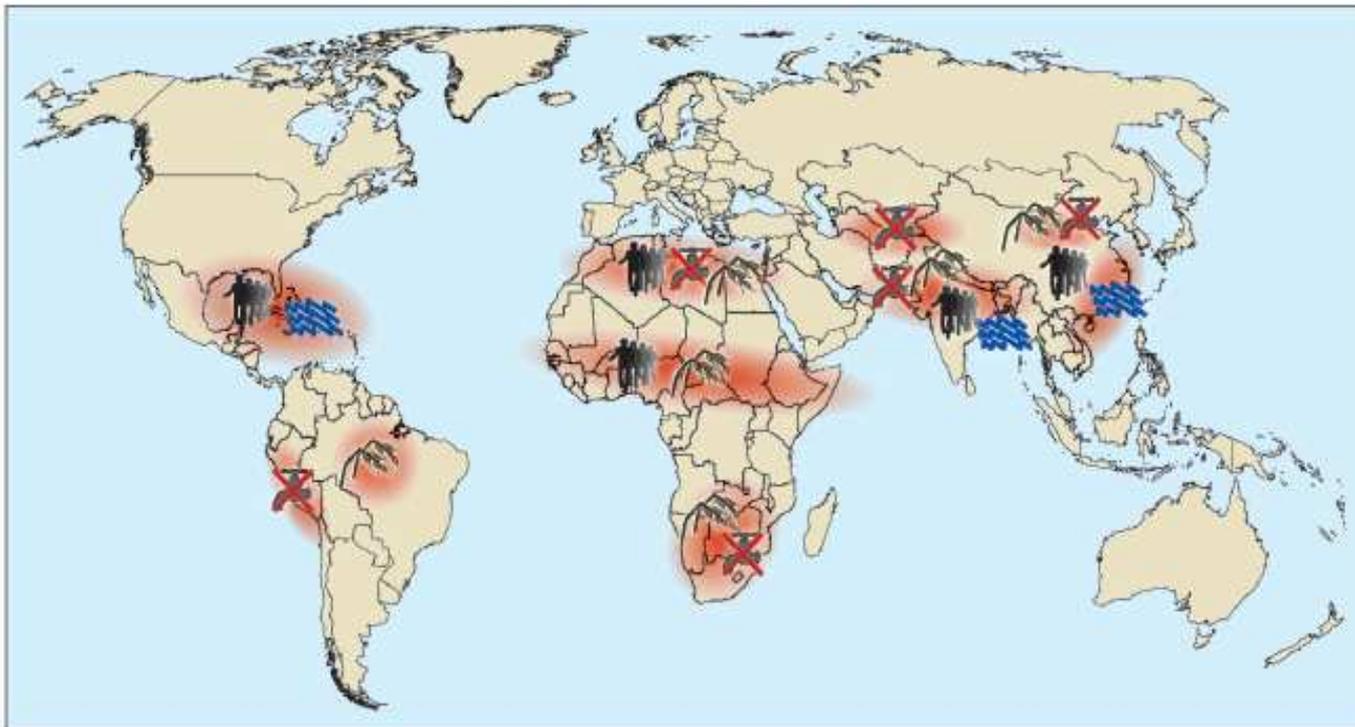


4F: Potential danger of drought by country, trends in the climatic water balance 1975-2004



Regional Security Challenges & Risks due to Global Climate Change (WBGU 2007)

Figure 4.7: Regional hotspots and security risks associated with climate change. Source: WBGU (2008: 4). Reprinted with permission.



Conflict constellations in selected hotspots



Climate-induced degradation of freshwater resources



Climate-induced decline in food production



Hotspot



Climate-induced increase in storm and flood disasters



Environmentally-induced migration

Security-related challenges in MENA region:

- ◆ Water scarcity to rise due to demand increase and supply decline
- ◆ Rising food deficits
- ◆ Rising environmentally induced migration

Four Climate-related Conflict Scenarios (WBGU 2007)

- ◆ *Climate-induced degradation of freshwater resources*
- ◆ *Climate-induced decline in food production*
- ◆ *Climate-induced increase in storm, flood, (drought) disasters*
- ◆ ***Environmentally-induced migration***

EU paper: Climate Change and International Security (2008)

- ◆ Those parts of the populations that already suffer from poor health conditions, unemployment or social exclusion are rendered more vulnerable to the effects of climate change, which could amplify or trigger migration within and between countries.
- ◆ The UN predicts that there will be millions of "environmental" migrants by 2020 with climate change as one of the major drivers of this phenomenon.
- ◆ Some countries that are extremely vulnerable to climate change are already calling for international recognition of such environmentally-induced migration. Such migration may increase conflicts in transit and destination areas. Europe must expect substantially increased migratory pressure.

Climate Change and Migration

- ◆ Conceptual dispute: impact of climate change on migration (environmental & climate refugees vs. environmentally- & **climate-induced forced migration**).
- ◆ Latter stresses *anthropogenic climate change (ACC)*:
 - *one of several causes, triggers and multipliers* for forced migration (*push factors*)
 - besides the *pull factors* of the attractiveness of target countries and family networks.
 - Myers estimates not based on statistical evidence.
 - Lack of statistical evidence (UNPP, UNPF, UNHCR, IOM, OECD-Sopemi)
 - Lack of comparable sophisticated case studies

IOM (2007) Migration and Environment

IOM Definition:

- ◆ Environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad.

IOM: Four scenarios on migration & environmental change:

- *A: Migration at less advanced stages of gradual environmental change* (temp. work migration, support of family with remittances);
- *B: Migration at advanced stages of gradual environmental change* (permanent often irregular migration, e.g. due to sea-level rise);
- *C: Migration due to extreme weather events* (temporary or permanent movement);
- *D: Migration due to large-scale development and land conservation* (temporary or permanent resettlement).

IOM (2007) Migration and Environment

Migrants may also cause environmental impacts in

- ◆ *areas of destination* (scenario E: deforestation, unsustainable resource management, overexploitation, rapid urbanization, strain of infrastructure)
- ◆ *areas of origin* (sc. F: reduce resources for combating causes).

IOM noted 2 scenarios on interaction between migration, environmental change, human security & conflict:

- ◆ **Sc. G:** *human security challenges of environm. change & migration* (diseases, destruction of infrastructure, income decline: poor most vuln.),
- ◆ **Sc. H:** *conflict potential of environment change and migration* (environmental conflicts as a cause for displacement, resource competition, beyond coping capacities, impact on social cohesion in urban centres).

IOM: 4 principles for effective env. migration management:

- 1) proactive policy and early action;
- 2) comprehensive and coherent policies;
- 3) bilateral- and regional cooperation;
- 4) multi-stakeholder partnership.

Causes for Climate-Induced Migration Across the Mediterranean

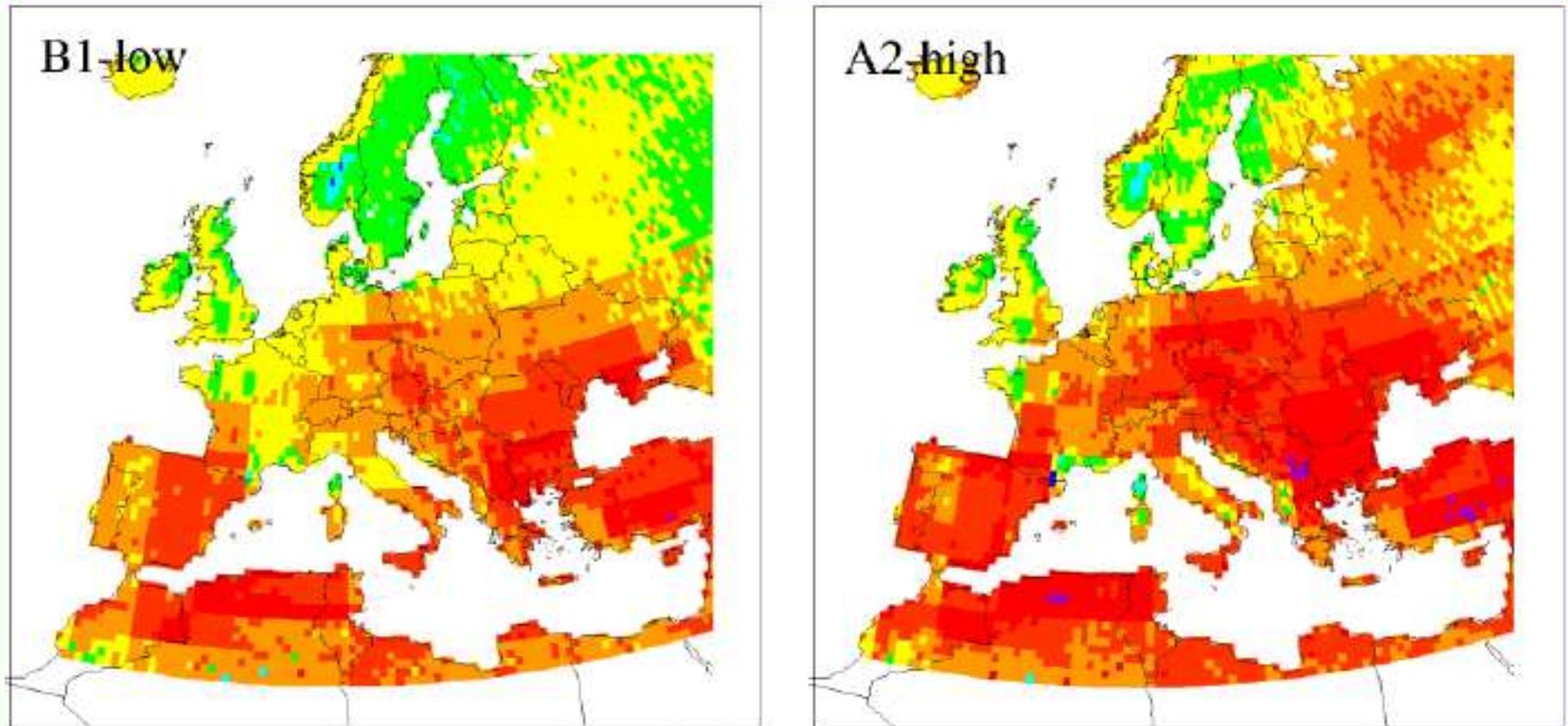
ACC has direct impacts on Mediterranean & MENA regions:

- ◆ **increase in annual av. temperature (1.8-6.4 °C by 2100);**
- ◆ **increase in sea-level rise (18 cm to more than 2,4 metres);**
- ◆ **increase in number & intensity of hydro-meteorological hazards (drought, heat waves, forest fires, storms, floods, landslides);**
- ◆ **indirect impacts on agriculture (precipitation decline, evapotranspiration rise, drop in crop yields), tourism and on human health. |**
- ◆ **In past, rapid population growth, severe droughts and lack of survival prospects forced people to leave their homes and livelihoods.**

Depending on projected av. temperature increases direct & indirect ACC impacts differ, as do push factors for climate-induced migration from the MENA, West and South Asia to EU countries.

- ◆ **No predictions on future migration streams can be made, different climate scenarios -> different climate-induced migration scenarios.**

Water Availability 2050 (M. Parry, IPCC, London, 2005)



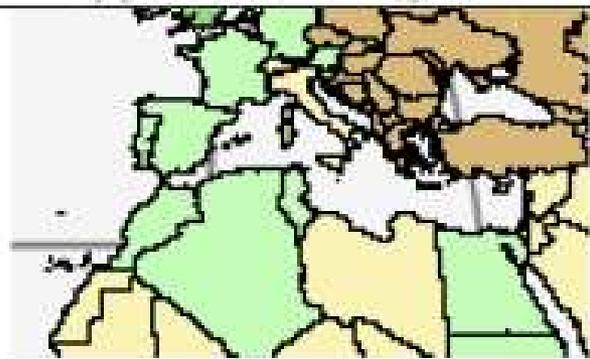
% change



Climate Change and Food Security

Source: WBGU 2006

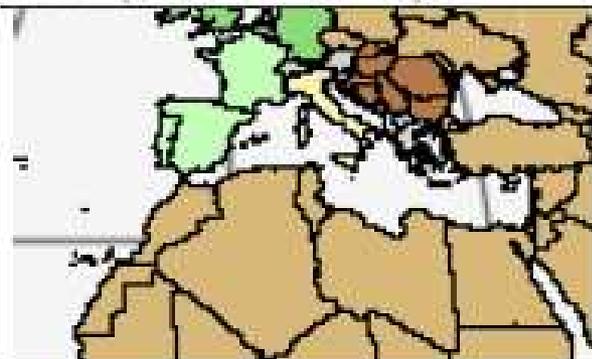
5A: Food security by 2020 (2010-2039) (HADCM3 GGal)



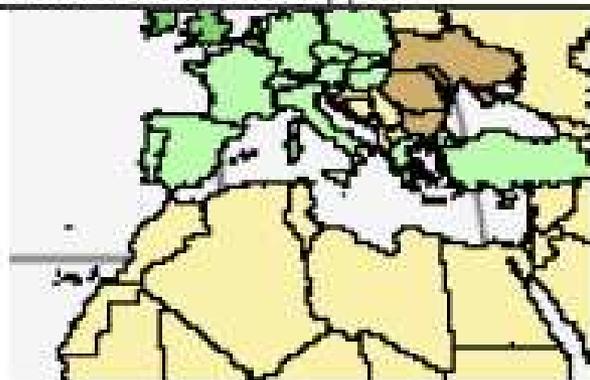
5B: Food security by 2050 (2040-2069) (HADCM3 GGal)



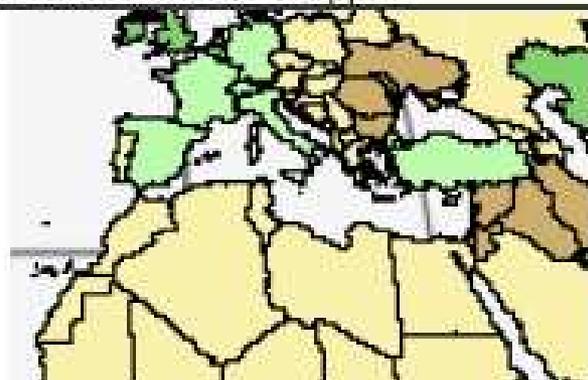
5C: Food security by 2080 (2070-2099) (HADCM3 GGal)



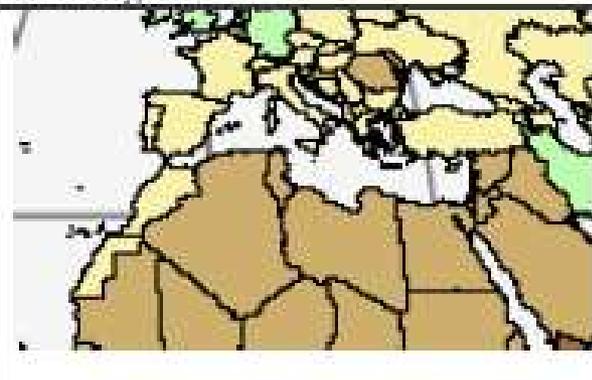
5D: Food security by 2080 (2070-2099) (HADCM2), CO₂ Stabilisation at 550ppmv



5E: Food security by 2080 (2070-2099) (HADCM2), CO₂ Stabilisation at 750ppmv



5F: Food security by 2080 (2070-2099) (HADCM2 IS92a), CO₂ unmitigated



potential yield change [%]



Population Growth: Southern Europe and Maghreb (1850-2050)

UN Population Projection (Rev. /2000 & 2004), mio.

Source: UN Populations Division: World Population Prospects. 2004 Rev.

	1850	1900	1950	2000	2025	2050	1950-2050	2000-2050
Algeria	3.0	5.0	8.75	30.29	42.74	51.18	42.43	20.89
Morocco	3.0	5.0	8.95	29.88	42.00	50.36	41.41	20.48
Tunisia	1.0	1.5	3.53	9.46	12.34	14.08	10.55	4.62

	2000 R 1 2000	2000 R.2 2004	2050 R 1 2000	2050 R.2 2004	1950-2050 R.1	1950-2050 R.2	2000-2050 R.1	2000-2050 R.2
France	59,24	59,28	61,83	63,12	20,00	17,45	2,59	3,84
Spain	39,91	40,7	31,28	42,54	3,27	14.53	-8.63	1,82
Italy	57,53	57.53	42,96	50,91	-4,14	3,81	--14,57	6,80

Population Growth: Near East (1850-2050)

	Population growth and projection							change	
	1850	1900	1950	1980	2005	2025	2050	1950 2050	2005 2050
Turkey	10.0	13.0	21.5	46.3	73.0	90.0	99.0	77.5	26.0
Syria	1.5	1.8	3.5	9.0	18.9	27.5	34.9	31.4	16.0
Lebanon	0.35	0.5	1.4	2.8	4.0	4.8	5.2	3.8	1.2
Jordan	0.25	0.3	0.48	2.2	5.4	8.0	10.5	10.1	5.0
Israel			1.26	3.76	6.7	8.7	10.5	9.3	3.8
Palestine	0.35	0.5	1.0	1.48	3.7	6.6	10.3	9.3	6.5
Egypt	5.5	10.0	21.8	43.7	72.9	98.5	121.2	99.4	48.3
Total	17.95	26.1	50.9	109.2	184.6	244.1	291.6	240.7	107.0

Migration in the Mediterranean (1950-2000)

<i>Region</i>	<i>1950-1960</i>	<i>1960-1970</i>	<i>1970-1980</i>	<i>1980-1990</i>	<i>1990-2000</i>
	<i>Net number of migrants per year (thousands)</i>				
Mediterranean	-2,765	-4,097	-2,127	-839	369
North-western Mediterranean	-1,521	-761	1,079	337	2,124
North-eastern Mediterranean	-823	-1,162	-71	-162	-888
Eastern Mediterranean	576	-406	-1,295	-506	921
Southern Mediterranean	-997	-1,769	-1,840	-508	-1,788
	<i>Net migration rate</i>				
Mediterranean	-1.1	-1.4	-0.6	-0.2	0.1
North-western Mediterranean	-1.2	-0.5	0.7	0.2	1.3
North-eastern Mediterranean	-2.4	-3.1	-0.2	-0.4	-2.0
Eastern Mediterranean	1.7	-0.9	-2.3	-0.7	1.0
Southern Mediterranean	-2.0	-2.8	-2.3	-0.5	-1.4

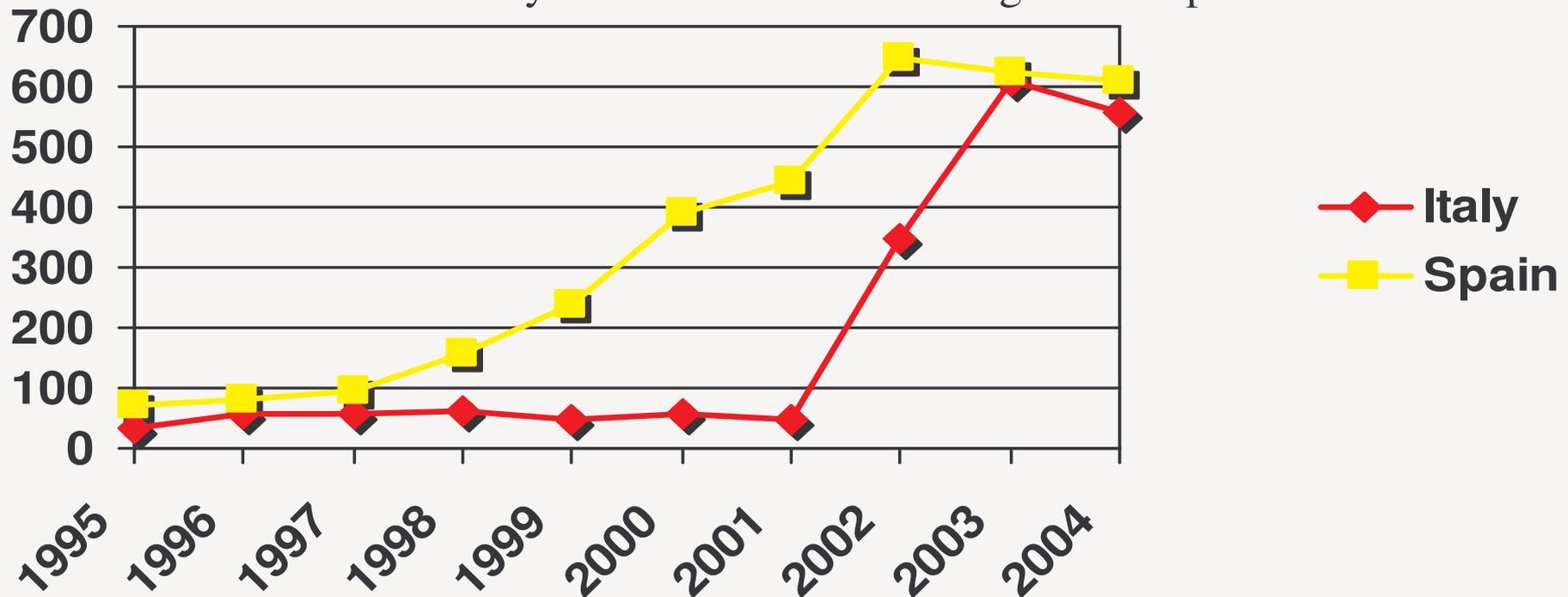
Source: United Nations (2001). *World Population Prospects: The 2000 Revision*. Disk 2: Extensive Set. (United Nations Publication, Sales No. E.01.XIII.13)

Migration Saldo in Italy & Spain 1995 - 2004 (in 1.000)

Longterm migration trends (1950-2005)

Southern Mediterranean: region of emigration, flow depends on immigration policies of the EU countries

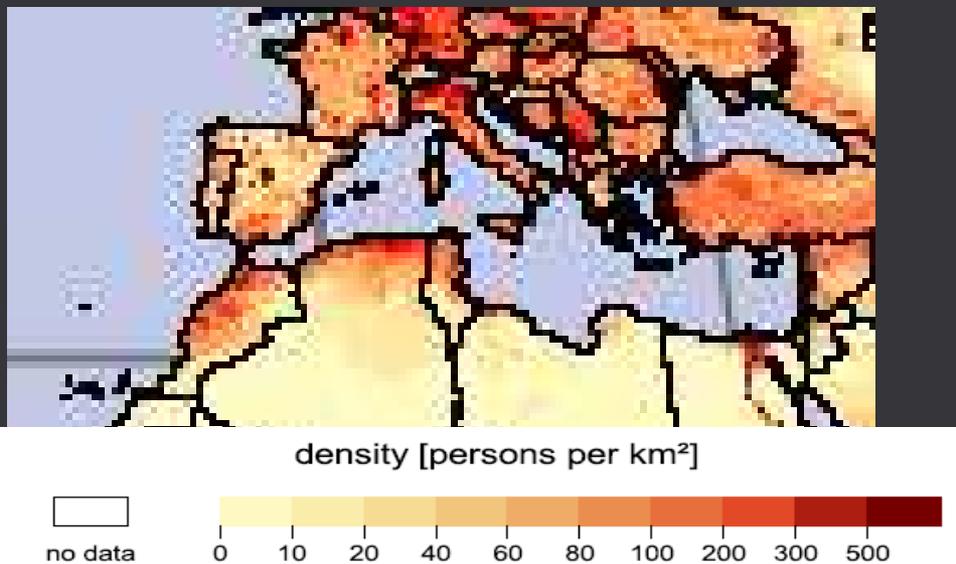
NW Mediterranean (Spain & Italy): from major emigration to immigration countries within 25-50 years. Most dramatic change: 1995- present



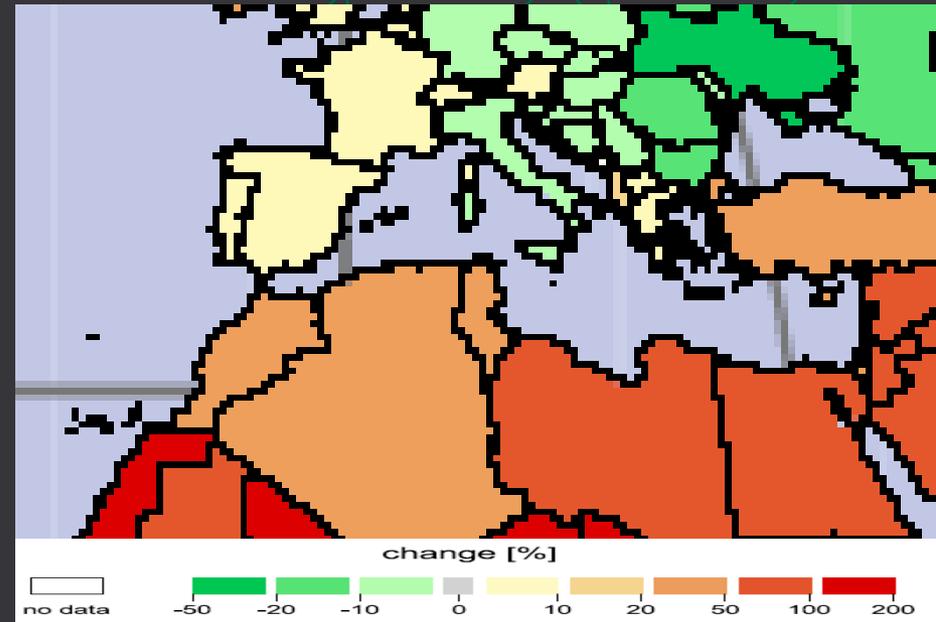
Changes in population density in North Africa (2000-2050)



Population density by country average and urban concentrations in 2005



- ◆ Dramatic population growth
 - **1950**: 42 mio.; **2000**: 142 mio.
 - **2020**: 193 mio. **2050**: 244 mio.
- ◆ Rapid urbanization (in %)
 - **1950**: 25; **2000**: 48; **2030**: 63
- ◆ High population density in cities: increase:2005 to 2025



People's Movements

Urbanization Processes (1950-2030)

According to urbanization reports of the UN Population Division (UN 2000, 2002, 2004, 2006) nearly all **population growth will be concentrated in the urban centres** many of them are located in the narrow coastal strip in the MENA region of the Maghreb and Masreq.

	1950	1960	1980	2000	2010	2020	2030
Algeria	22.3	30.4	43.5	57.1	62,7	67,9	72,6
Morocco	26.2	29.2	41.3	55.5	61.9	67.5	72.5
Tunisia	31.2	36.0	51.5	62.8	66.2	70.2	72.5
North Africa	24.7	30.1	40.4	48.4	52.6	57.6	63.4
France	54.3	62.0	73.3	75.7	77.8	80.3	83.0
Spain	51.9	56.6	66.0	76.3	77.3	79.2	81.7
Italy	54.3	59.4	66.6	67.2	68.2	70.6	74.3
S. Europe	44.3	49.4	61.2	65.4	67.2	70.2	74.1

Causes & Impacts of Populations Change

Major cause for populations movement in North Africa and in the Near East (1950-2005) was **populations growth and not global climate change.**

Environmental factors were neither sole nor major but additional causes and triggers of peoples' movements

Major impact was so far rural-urban migration (rapid growth in urbanization rate) in both sub regions.

Emigration from North Africa and the Near East to Europe, North America and the Gulf was primarily due to a combination of push (economic, social, political, environmental) and pull (family networks) factors

So far role of climate change is empirically unclear.

Climate Change Impact on Migration in the Mediterranean

- ◆ Expert study for WBGU, distinguished for MENA:
- ◆ 5 scenarios of env. dimension of *human security*:
 - 1. distress and survival;
 - 2. migration;
 - 3. transmigration;
 - 4. riots and civil war;
 - 5. diasporas;
- ◆ five sc. of env. dimension of *(inter)national security*:
 - 6. combating desertification;
 - 7. hazard response;
 - 8. peaceful resolution of local water and land-use conflicts;
 - 9. water cooperation in the Nile basin;
 - 10. Euro-Mediterranean cooperation to avoid conflicts over migration and to create alternative livelihoods in drylands

Migration scenarios: Impacts for Human and Societal Security

- ◆ **Scenario 1:** During drought periods water and food will be scarce, food prices may rise and survival in the rural areas may become more difficult: force people to leave their homes and livelihoods
- ◆ **Scenario 2:** On this survival dilemma for parts of the rural population many young men react by moving to the urban centres (**urbanization**) and if affordable overseas.
- ◆ **Scenario 3:** As in the past (1970s-90s) **food protests** may challenge the governments
- ◆ **Scenario 4: Migration:** besides econ. reasons, societal & environmental causes may become key triggers.
- ◆ **Scenario 5:** The countries of North Africa have already become the goal of transmigrants from sub-Saharan Africa, many of them try to get to Europe or North America. This has in some cases resulted in violent conflicts with the police & hosts.

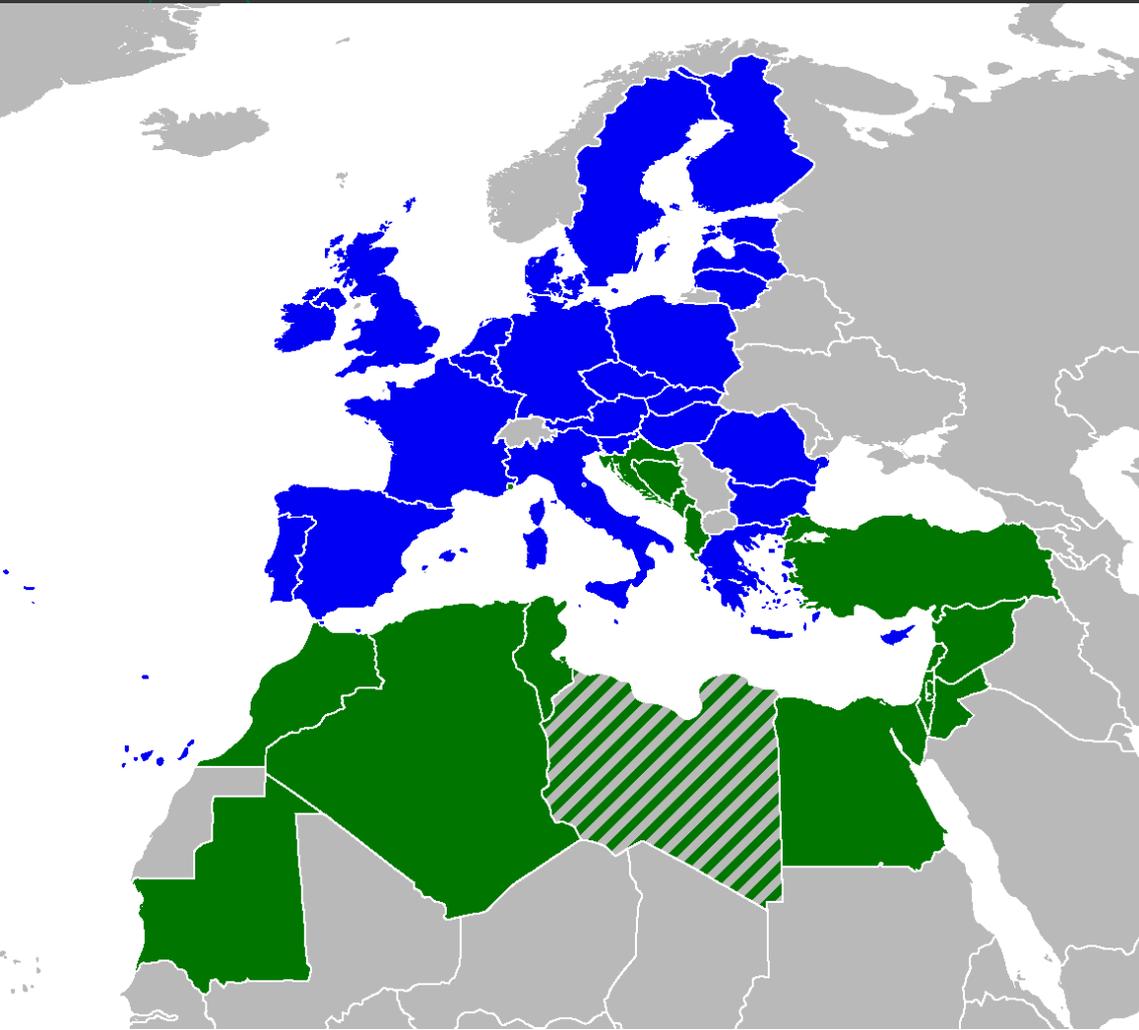
Proactive Policies for Coping with Climate-Induced Migration in the MENA

- ◆ Trans-Mediterranean migration has been securitized by EU decision-makers and was a major motivation for Barcelona process (1995) and the Mediterranean Union that was adopted on 13 July 2008.
- ◆ Two EU policy strategies on migration overlap:
 - **short-term policy response** (FRONTEX, tightening of asylum laws, justice&home affairs [Tampere, Dublin, The Hague]);
 - **longer-term proactive development & environmental security strategies** that aim at containing and overcoming causes for future climate-induced migration aiming at a 2°C world by 2100 what requires a major decarbonisation of the European and the world economy by 2050 in the post-2012 regime.
 - **supplementary strategy for development of drylands: Mediterranean Union Solar Initiative (France/Germany/Egypt)**

Proactive Policy Proposals for Coping with Climate-Induced Migration

- ◆ Millennium Ecosystem Assessment (2005) & UNEP-GEO 4 (2007): three scenarios most promising:
 - a *Sustainability First* scenario (UNEP) to be complemented with
 - a global proactive *TechnoGarden* (based on renewable energies);
 - a regional proactive *Adapting Mosaic* (MA).
 - These three scenarios could contribute to policies aiming at a **sustainable peace based on a sustainability strategy**.
 - This requires a conceptual debate on a **peace and security policy in the Anthropocene**.
 - On this broader background the paper suggests trans-Mediterranean **partnership building measures** and a **partnership building strategy** for which the new Mediterranean Union (Paris 2008) could offer a policy framework if the European Union fully implements the aims of the
 - ◆ Cardiff process (1998),
 - ◆ its green diplomacy (Thessaloniki 2003) and
 - ◆ its climate policy goals (Brussels 2007).

Proposed MEHSEC Initiative for the Mediterranean Union



Mediterranean Environmental & Human Security Initiative

- Address longer-term environmental dimension of human security posed by GEC: water, soil & climate change
- Address causes & regional impacts of GEC
- **Framework of the Mediterranean Union**
- Partners: MU (leader),
- EU, UN, UNEP, UNDP, OSCE, Arab League, WMO, IPCC et al.

Tasks of MEHSEC

- ◆ **MEHSEC** should address soft non-military, environmentally-induced security threats, challenges vulnerabilities and risks for the Mediterranean that are projected to evolve by 2025, 2050 and 2100 and that cannot be solved with military means.
- ◆ They can only be overcome by forward-looking, proactive, functional cooperation that requires knowledge (regional climate change scenarios for the Mediterranean: Mediterranean climate impact assessment).
- ◆ **Initiative should coordinate global & regional organizations:**
 - to analyse, assess available research and develop joint cooperative adaptation and mitigation measures
 - to develop cooperative measures dealing with societal consequences, including environmentally-induced forced migration that may lead to hunger & food riots, domestic conflicts & only in the worst case in violent conflicts.
- ◆ **Goal: preventive diplomacy and conflict avoidance by addressing root causes of conflicts:**
 - Sustainability first scenario of UNEP's GEO-4 Report (2007)
 - proactive global and regional scenarios suggested in final report of the Millennium Ecosystem Assessment (2005).

Conclusions

◆ Research needs:

- Analyses on climate change impacts for Western Mediterranean and Near and Middle East
- Inclusion of why people migrate into the census data
- Comparative analyses on desertification: North/South in Mediterr.
- Statistical and motivation analyses on why people migrate

◆ Policy needs:

- Shift: reactive to proactive measures on controlling migration
- Address economic, societal, environmental causes of migration
 - ◆ Reduce GHG emissions
 - ◆ Stabilize average temperature increase to 2°C by 2100 (EU goal)

◆ Policy framework:

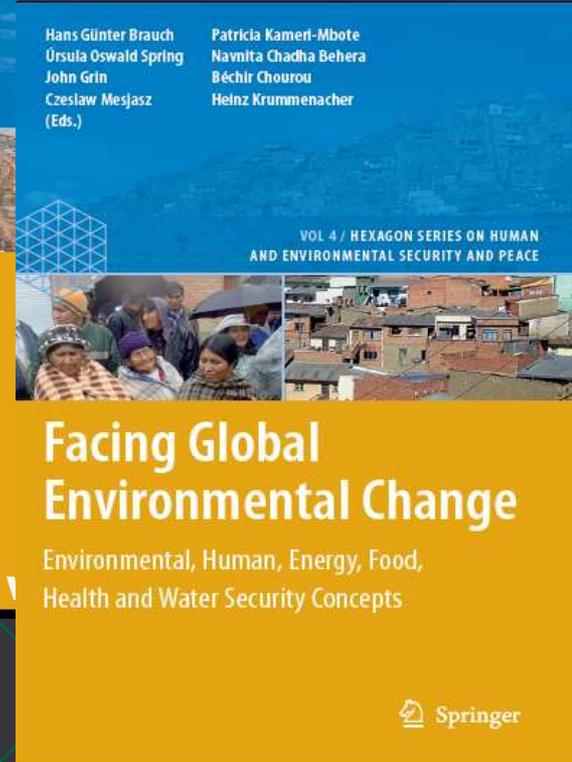
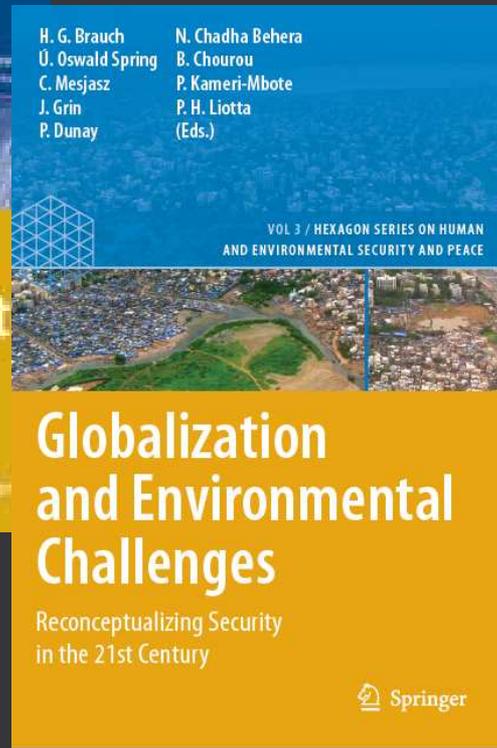
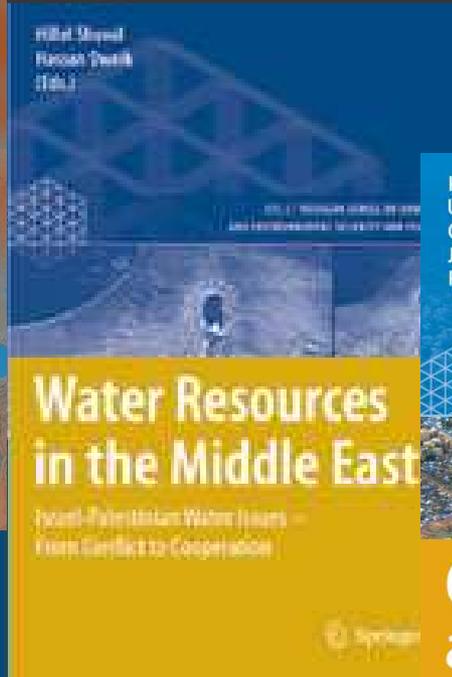
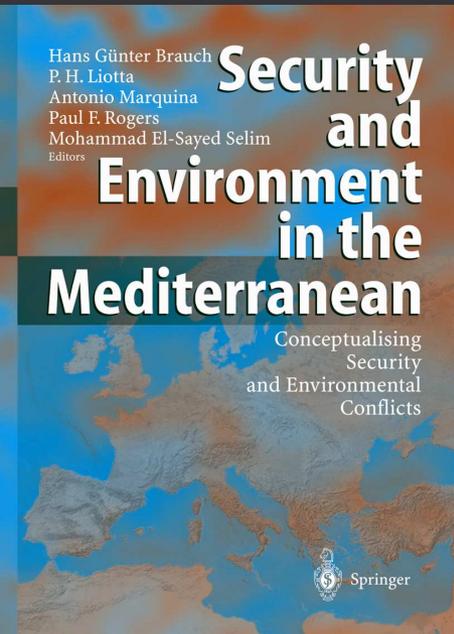
- Mediterranean Union & Barcelona Process,
- Proposed MEHSEC Initiative (EU, Med. Union, UNEP, UNDP et al.)

◆ **MEHSEC Initiative** for the whole Mediterranean region and specific focus on Western, Eastern, Northwestern and Southeastern Mediterranean subregions.

Sources: *Security Handbook for the Anthropocene* (Berlin-Heidelberg-New York: Springer):

- ◆ Brauch/Oswald Spring/Mesjasz/Grin/Dunay/Behera/Chourou/Kameri-Mbote/Liotta (Eds.): *Globalization and Environmental Challenges: Reconceptualizing Security in the 21 st Century* (2008).
- ◆ Brauch/Oswald Spring/Grin/Mesjasz/Kameri-Mbote/Behera/Chourou/Krummenacher (Eds.): *Facing Global Environmental Change: Environmental, Human, Energy, Food, Health and Water Security Concepts* (2009).
- ◆ Brauch/Oswald Spring/Mesjasz/Grin/Kameri-Mbote/Chourou/Dunay/Birkmann (Eds.): *Coping with Global Environmental Change, Disasters and Security – Threats, Challenges, Vulnerabilities and Risks* (2010).

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