

КОНЦЕПЦИИ СОВРЕМЕННОГО ЕСТЕСТВОЗНАНИЯ

ИСТОРИЧЕСКИЙ ФАКУЛЬТЕТ МГУ имени М.В. Ломоносова

1 курс, весенний семестр

Преподаватели

кафедры физической географии и ландшафтоведения
географического факультета МГУ имени М.В. Ломоносова

- Даниил Николаевич Козлов, доцент daniilkozlov@gmail.com
- Александр Владимирович Хорошев, доцент
- Татьяна Игоревна Харитонова, ст. преп.

Место в Интернете:

- <http://landscape.edu.ru>
- лекционные материалы, статьи, ссылки на тематические сайты

Занятия:

- среда 18.00 – 19.25, ауд. Д5

Проверка знаний:

- зачет



ЗНАКОМСТВО с ЕСТЕСТВЕННО-НАУЧНОЙ КАРТИНОЙ МИРА и

ее ролью в познании природных и социальных явлений

НАУЧНАЯ КАРТИНА МИРА

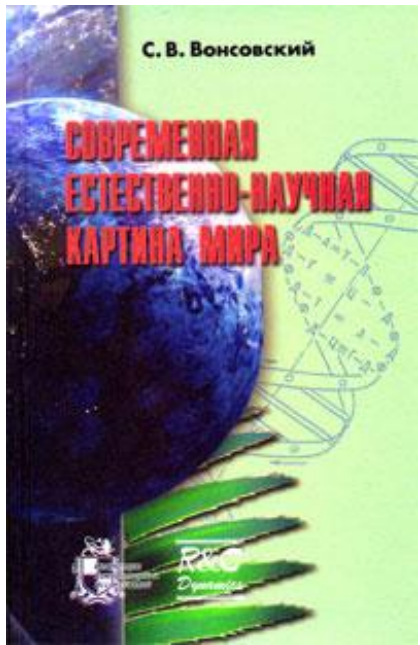
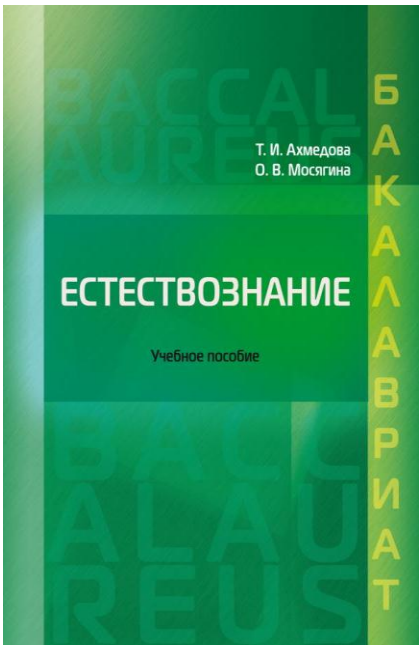
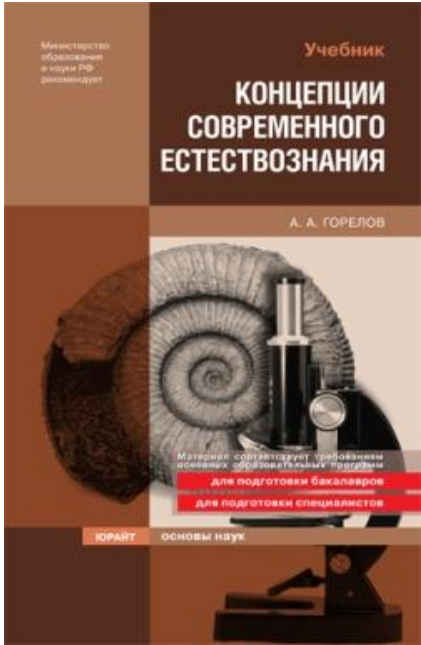
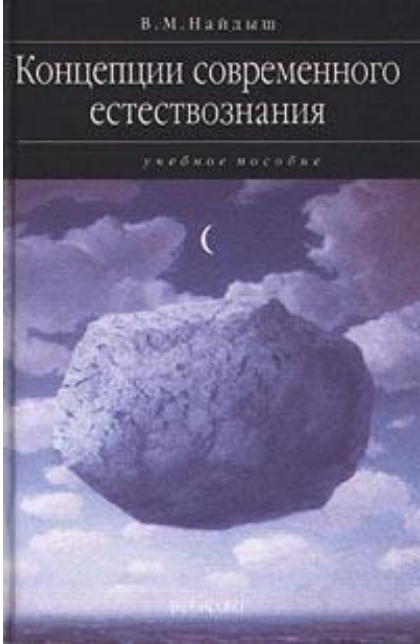
форма систематизации знаний, качественное обобщение и мировоззренческий синтез различных научных теорий

ЗАДАЧИ:

ЗНАТЬ и УМЕТЬ

- Раскрыть сущность общенаучных подходов (дедуктивного, индуктивного, системного, эволюционно-синергетического)
- Рассмотреть важнейшие концепции происхождения и организации ВСЕЛЕННОЙ – СОЛНЕЧНОЙ СИСТЕМЫ – ЗЕМЛИ как арены природных и социальных явлений
- этапы становления естествознания в рамках общего исторического процесса
- сформировать уровень научной грамотности, необходимый для адекватного понимания глобальных проблем человечества и сценариев его развития

ВСПОМОГАТЕЛЬНЫЕ МАТЕРИАЛЫ



ВСПОМОГАТЕЛЬНЫЕ МАТЕРИАЛЫ



Научная картина мира

Наука

Философия

Индуктивное умозаключение

Дедуктивное умозаключение

Информация

Самоорганизация

Вселенная

Космология

Солнечная система

Земля

Тектоника плит

Биосфера

Эволюционное учение

Креационизм

Человек разумный

...

КСЕ: КАЛЕНДАРНЫЙ ПЛАН 2013 г.

ЧИСЛО	СОДЕРЖАНИЕ		ЛЕКТОР
13.02	Современное естествознание: объекты и предмет изучения. Роль в познании природных и социальных явлений.		Д.Н. Козлов
20.02	Этапы развития естествознания. Сущность общенаучных подходов		
27.02	Научная картина мега-, макро- и микромира		
06.03	ОБЩЕЕ ЗЕМЛЕ- ВЕДЕНИЕ	Земля как планета	
13.03		Литосфера	
20.03		Атмосфера	
27.03		Гидросфера	
04.04		Биосфера и географическая оболочка	
11.04		Геоэкологические проблемы человечества	
18.04			
25.04	Социально-ориентированные направления естествознания		А.В. Хорошев
15.05			
	Зачет		

ПРОБЛЕМА: 12 лекций (24 часа) – содержание курса лекций ???

ЕСТЕСТВОЗНАНИЕ для ИСТОРИКОВ

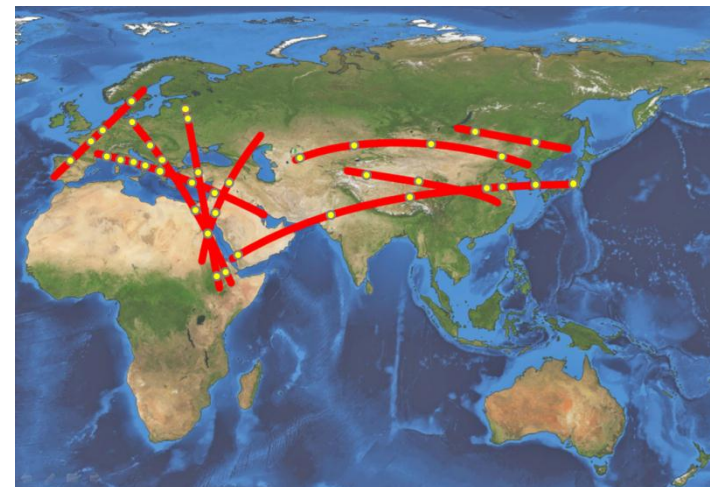
- система знаний и деятельности, объектом которых является ПРИРОДА – часть бытия, существующая по законам, действующих без участия активности людей
- элемент общей культуры человечества, один из основных показателей уровня развития цивилизации

Как компонент общего высшего образования:

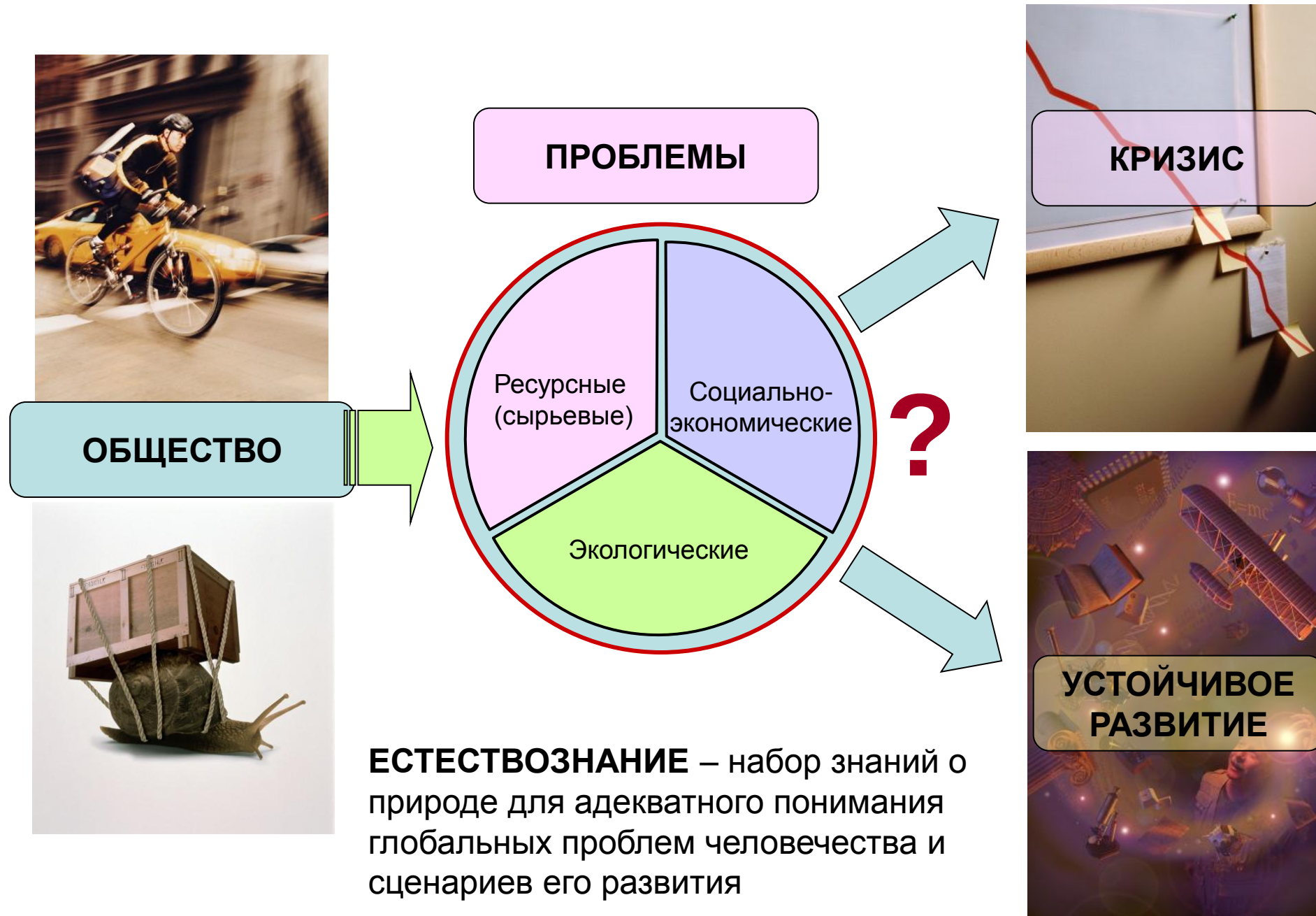
набор базовых знаний о природе для адекватного понимания глобальных проблем человечества и сценариев его развития

Как компонент специального образования:

Набор базовых знаний о природе для объяснения территориальной дифференциации человеческого общества в его историческом развитии



ГЛОБАЛЬНЫЕ ПРОБЛЕМЫ ЧЕЛОВЕЧЕСТВА



XXI век: ГЛОБАЛЬНЫЕ ПРОБЛЕМЫ ЧЕЛОВЕЧЕСТВА



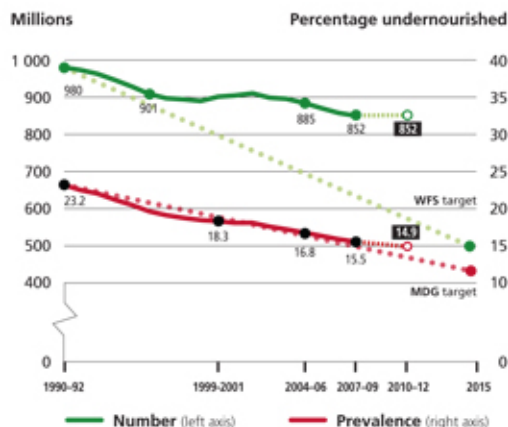


Food and Agriculture
Organization of the
United Nations
for a world without hunger

[FAO Home](#)
[FAO Hunger Portal](#)

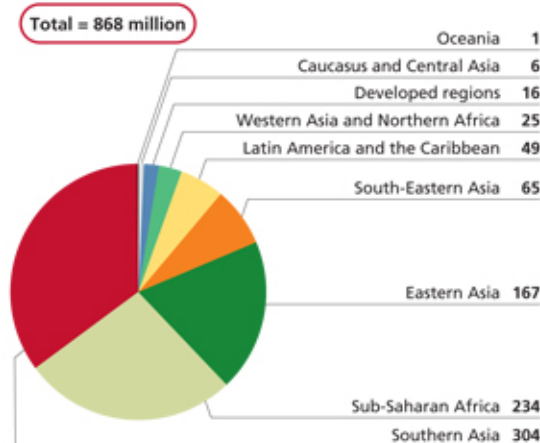
Hunger

Undernourishment in the developing world



Source: FAO.

Undernourishment in 2010-12, by region (millions)



Source: FAO.

Hunger statistics

Country:

Year:

[► FAOSTAT](#)
[► Download Food Security Statistics](#)

World

Number and percentage of undernourished persons

2010-2012	868	million (12%)
2007-2009	867	million (13%)
2004-2006	898	million (14%)
1991-2001	919	million (15%)
1990-1992	1000	million (19%)

Interactive hunger map

2012 Hunger Report

The State of Food Insecurity in the World raises awareness about global hunger issues, discusses underlying causes of hunger and malnutrition and monitors progress towards hunger reduction targets.



[► Read the report](#)

Infographic



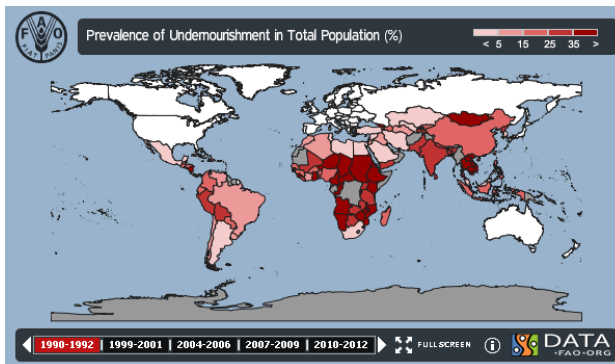
[► Infographic](#)

News

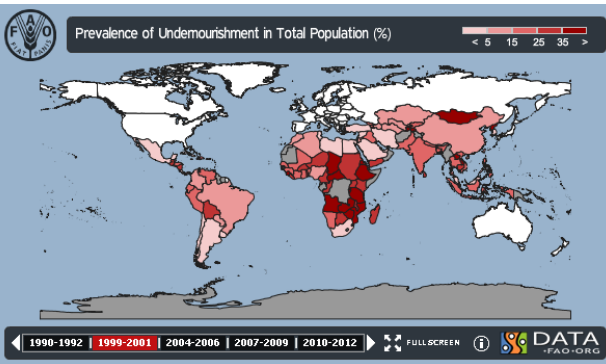
FAO Partners with International Academy of Gastronomy
Irish President voices

ГОЛОД

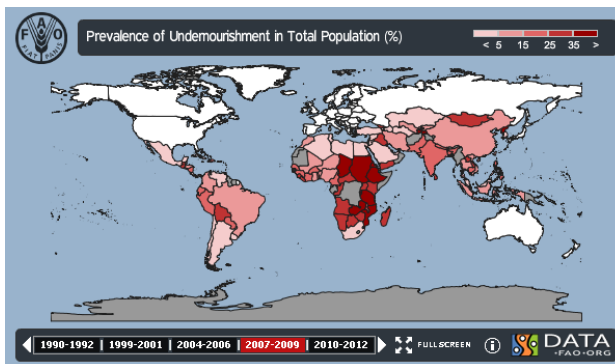
1990-1992 – **1000** млн. чел.



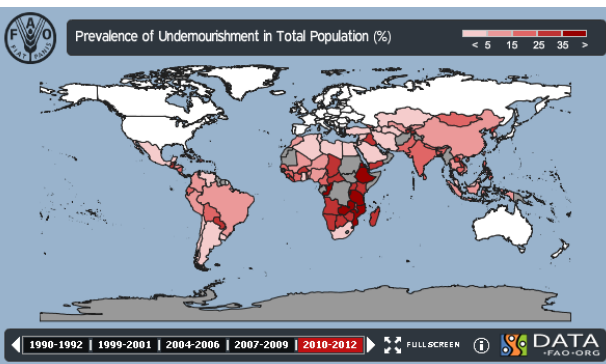
1991-2001 – **919** млн. чел.



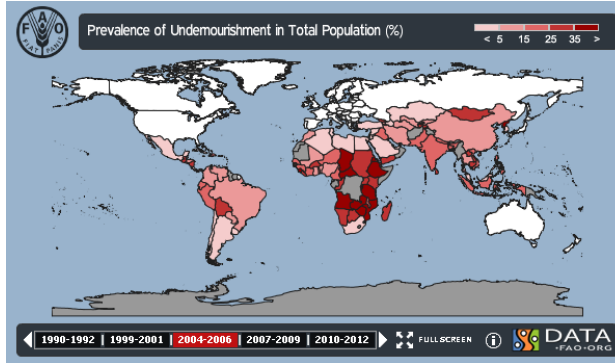
2004-2006 – **898** млн. чел.



2007-2009 – **867** млн. чел.



2010-2012 – **868** млн. чел.



2012-2015 – **???** млн. чел.

?

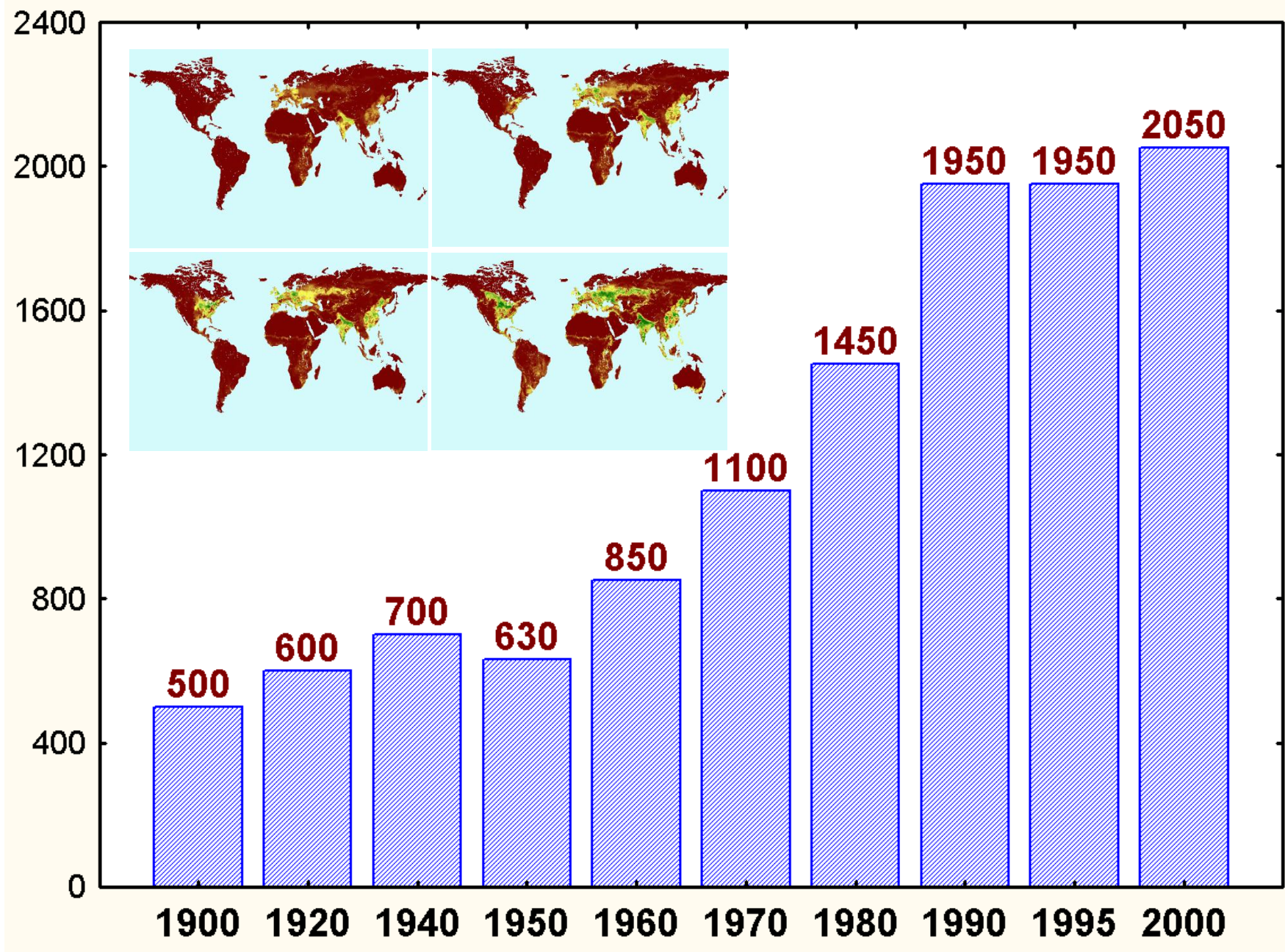
Number of hungry declining in Asia and Latin America



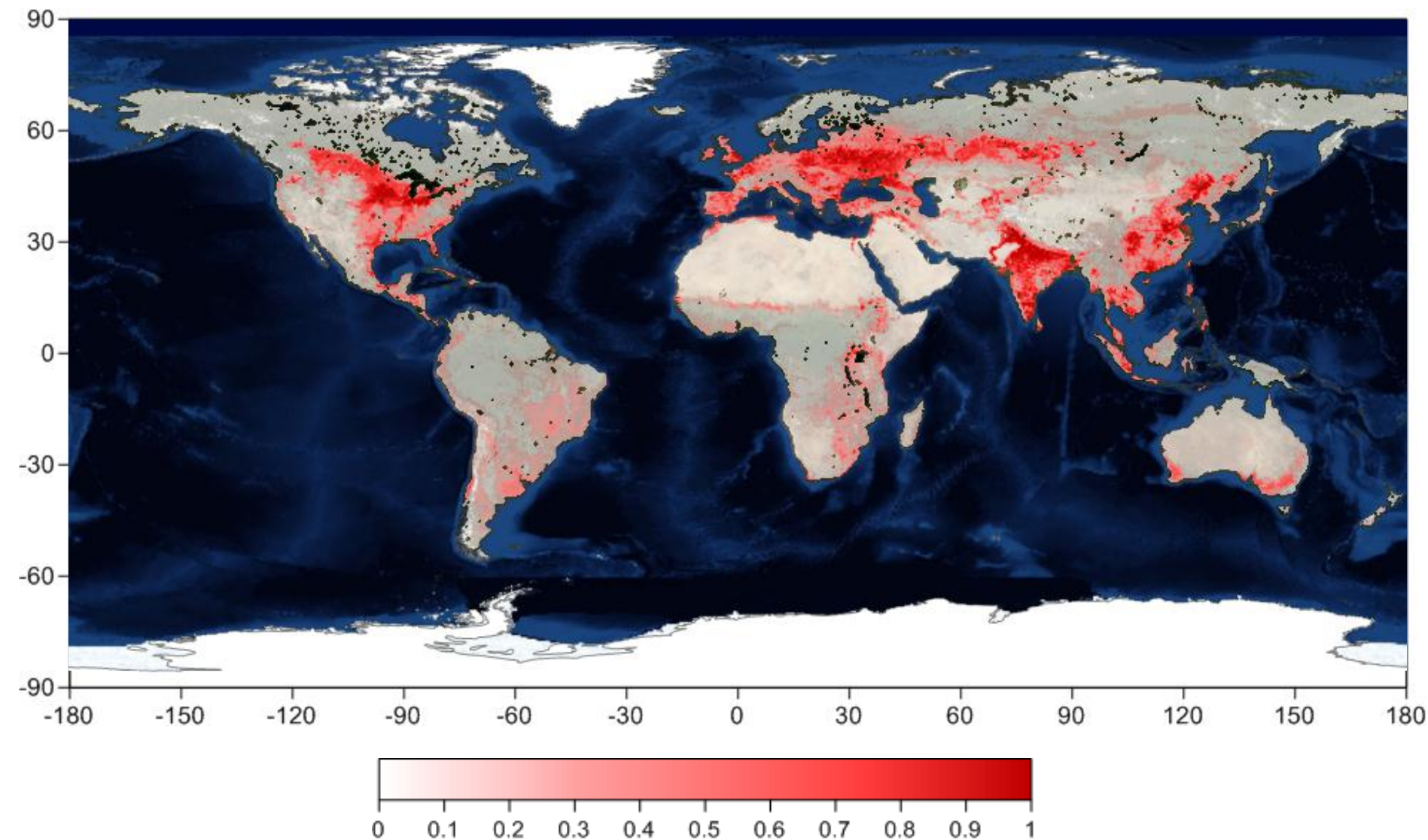
Number of hungry rising in sub-Saharan Africa

Asia and Latin America have reduced the number of hungry people, while the number is on the rise in sub-Saharan Africa

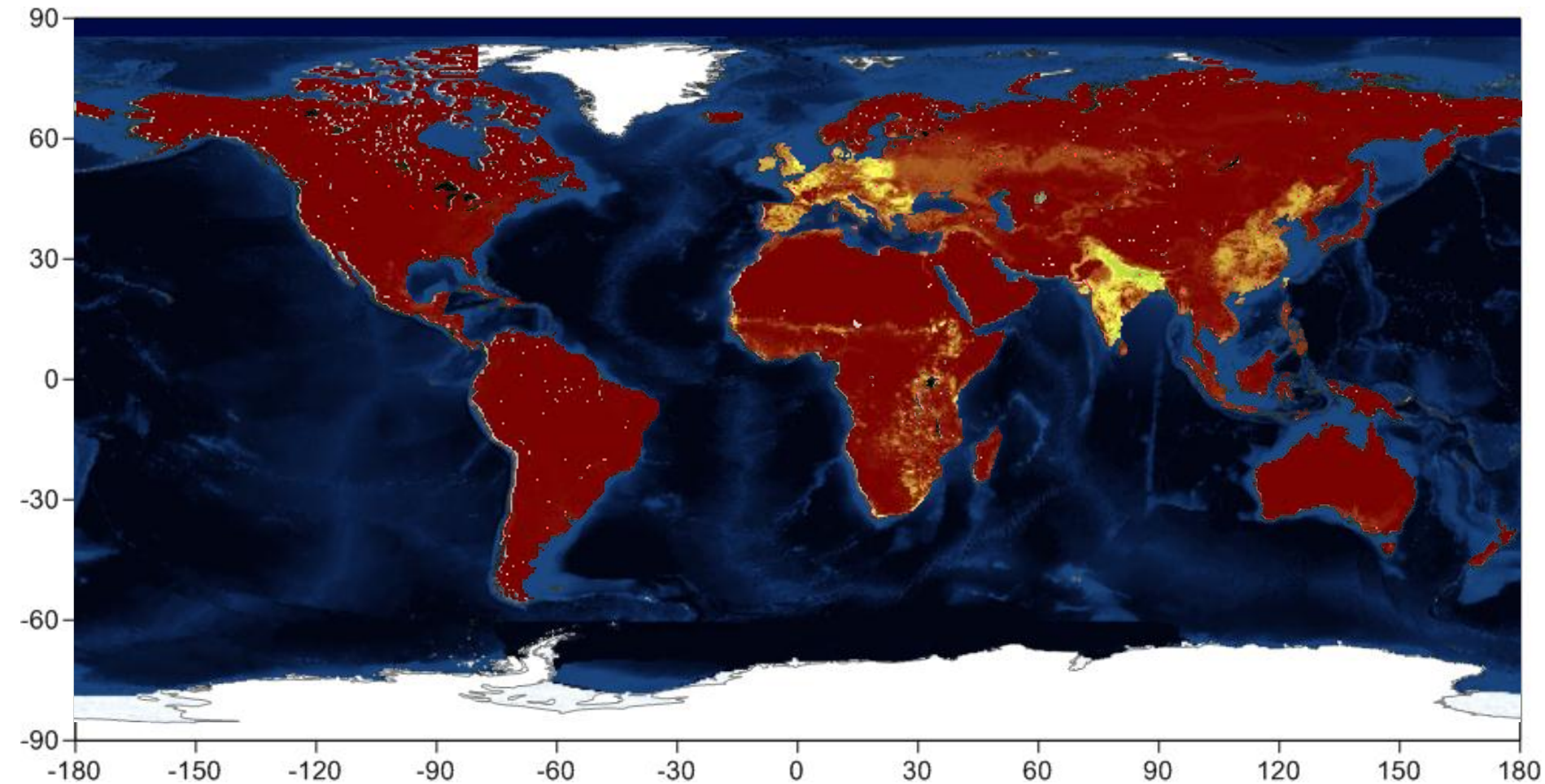
МИРОВОЕ ПРОИЗВОДСТВО ЗЕРНОВЫХ КУЛЬТУР, МЛН. Т



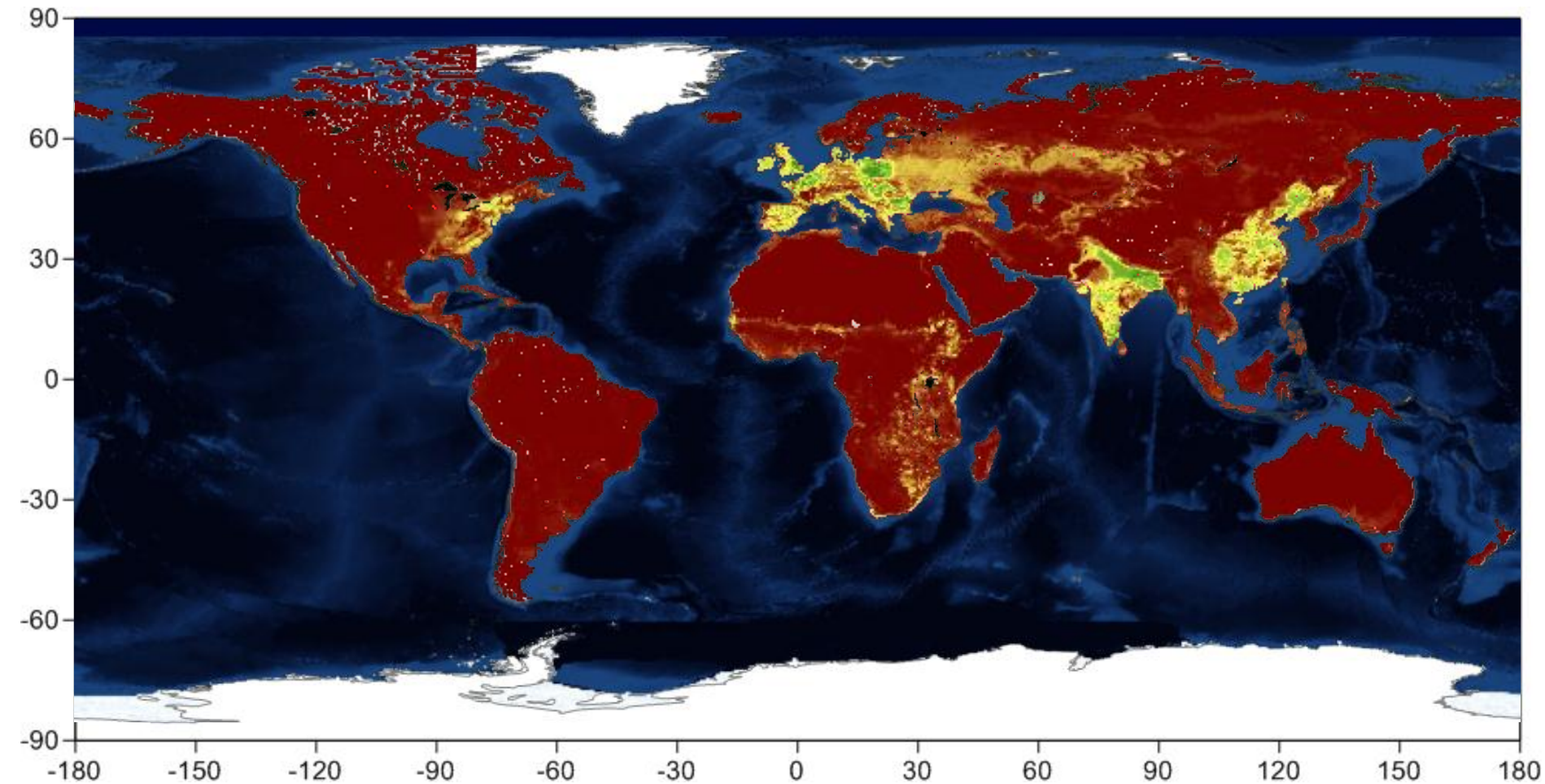
ДОЛЯ СЕЛЬСКОХОЗЯЙСТВЕННЫХ УГОДИЙ



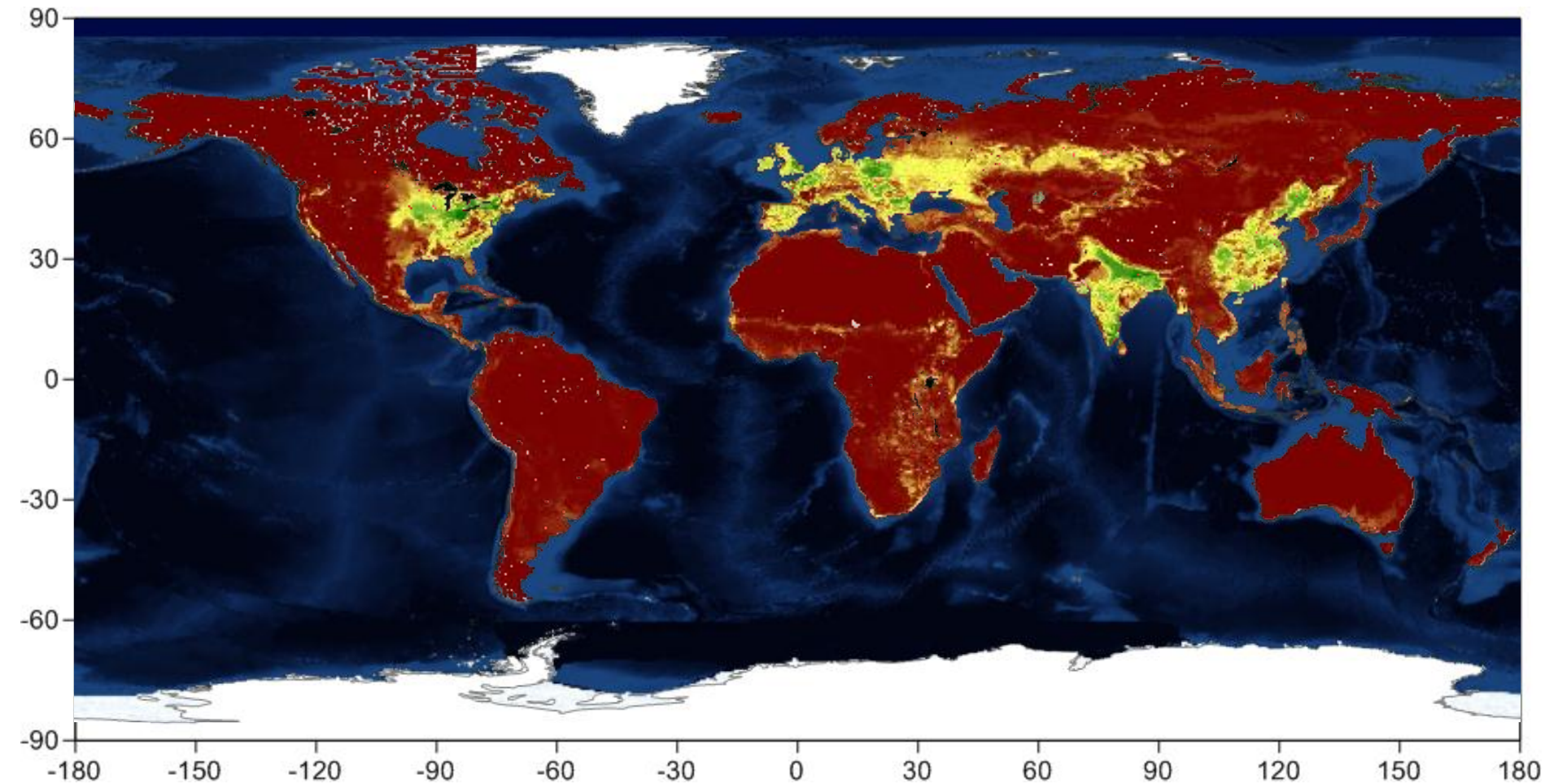
1700 г.



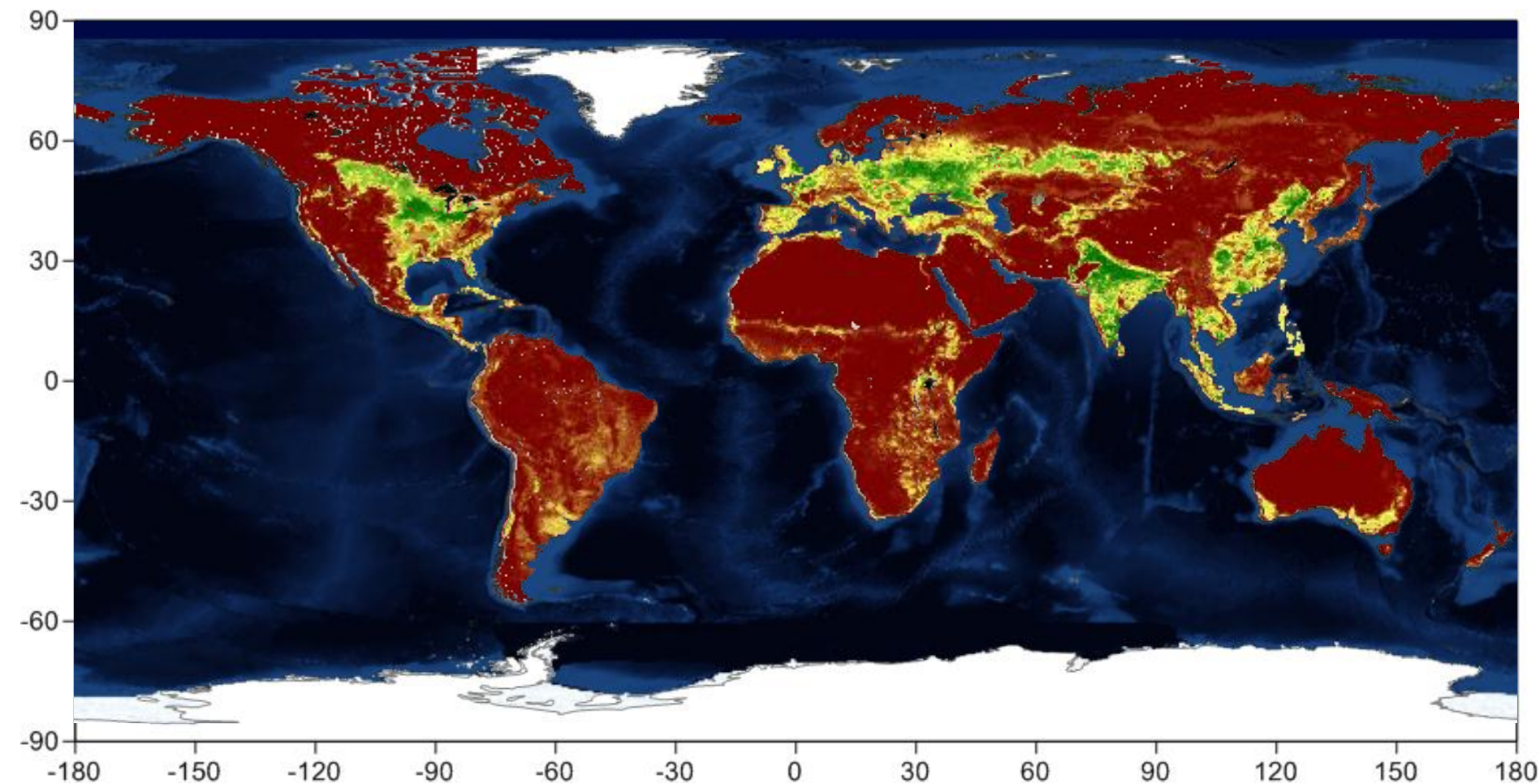
1800 г.



1900 г.

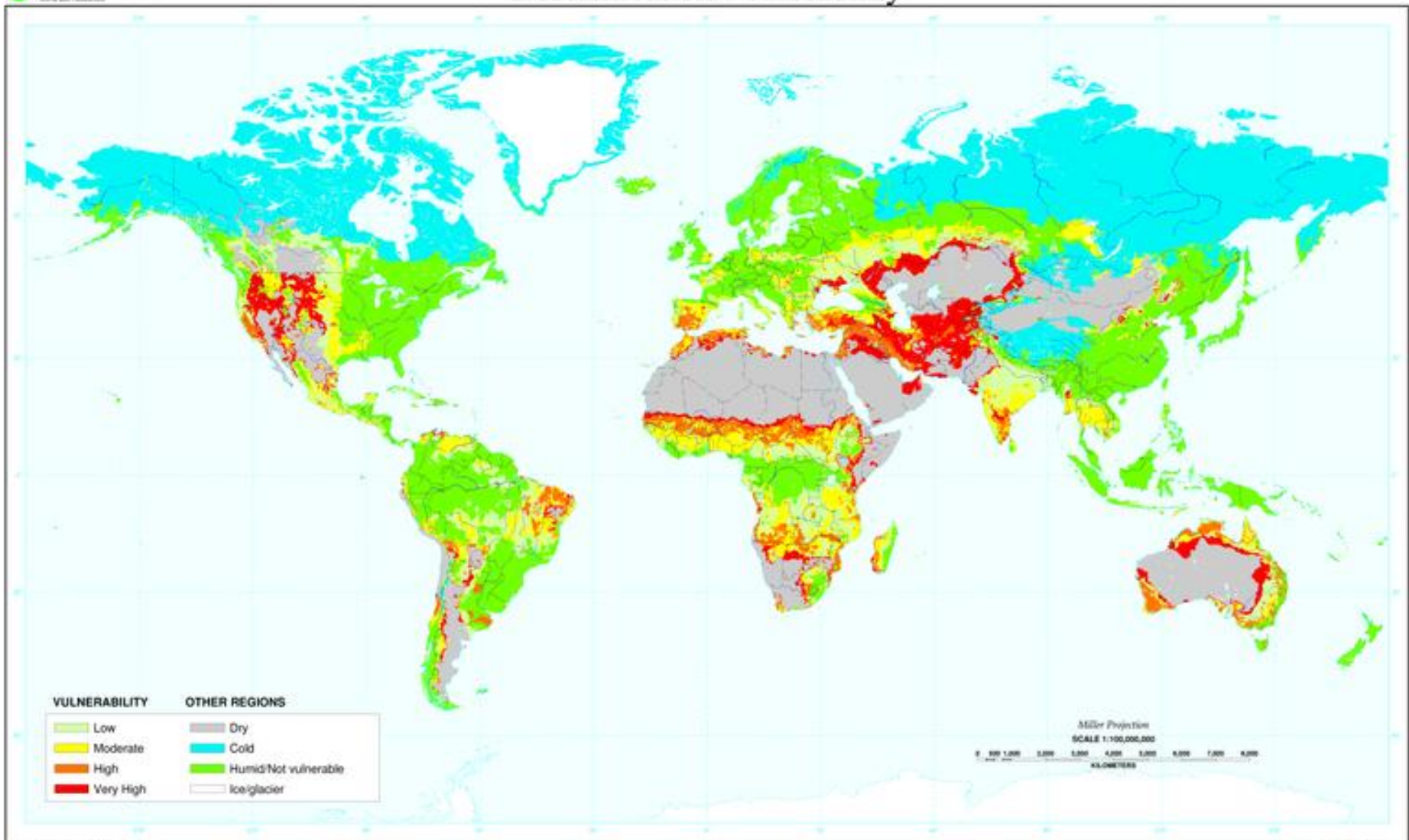


2000 г.



ОПУСТЫНИВАНИЕ

Desertification Vulnerability



ОПУСТЫНИВАНИЕ



The Oil Age

World Oil Production 1859 - 2050

Oil was created from the remains of plants and animals that died over millions of years. The source of most oil today can be traced to two brief periods of global warming some 90 and 150 million years ago, and to the shallow seas forming with algae that covered much of the earth at the time. As generations of sea life settled to the bottom, a unique carbon-rich sedimentary rock was formed. Over time, some of the rock sank deep beneath the surface, where the earth's natural heat gently cooked the rock's organic fraction, transforming it into a dark liquid: Petroleum—literally "rock oil"—was born.

Oil can migrate great distances from its subsurface birthplace, and much of it eventually escapes to the surface. Prehistoric people gathered thick crude from pools and smeared it on boats and dwellings to repel water. Steps of burning crude enhanced ancient man, inspiring at least one religion: The Chinese and Indians collected medicine from petroleum, while ancient "Greek fire" remained a secret on Medieval battlefields.

The Oil Age began in earnest in 1859, when Edwin Drake drilled one of the world's first commercial oil wells in Titusville, Pennsylvania. Man had discovered how to tap the immense stores of oil—some some million barrels—trapped by topped below the earth in impermeable cap rock. In the early decades of the oil age, most petroleum was refined into kerosene for illuminating the homes and businesses of a rapidly industrializing world.

Oil proved more effective than coal in running the world's trains and shipping networks. The rise of the automobile propelled demand for a new type of refined oil—gasoline—that surpassed kerosene in total production by 1910. Oil revolutionized

war, fueling a new generation of motorized tanks, airplanes and submarines. Oil powered the rapid suburbanization of America in the 1920s and 1960s, as millions took to the road and air travel took off.

Unimaginable everyday products—from pharmaceuticals to clothing to computers—depend on oil and its refinement into complex chemicals and plastics. Modern industrial farming, which feeds much of the world, would grind to a halt if deprived of diesel-powered tractors, oil and gas-based fertilizers to grow and harvest crops, and the fossil fuels to process, package and ship food to supermarkets worldwide. Stoked with cheap gasoline, the world's population has skyrocketed—from 1.5 billion at the start of the Oil Age to more than 6.8 billion in 2010.

Oil is an incredibly dense energy source. A gallon of crude weighs 3.2 kilos, generates as much energy as six kilos of coal, 10 kilos of wood, or the work of 50 people toiling all day. Oil fuel supplies about 35% of the industrial world's total energy needs and 95% of the fuel used to transport people and goods. Uniquely portable, oil can be shipped anywhere in the world in tankers, trucks and trains. Interactions in the flow of oil have caused some disruptions in industrial societies, as witnessed during the 1973 and 1979 oil shocks.

Oil is finite and nonrenewable. Of the earth's total endowment of conventional crude, we've consumed about half so far. New discoveries of oil peaked in the mid-1960s and by the early 1990s we began consuming more oil than we found. Today experts expect we will consume about four to six barrels of oil for each one discovered. Meanwhile flows from three-quarters of the world's largest oil-producing countries have already topped out and are shrinking year by year. These trends point to a crossroads for driver closer every day: the peak and decline of global oil production.

American geophysicist Marion King Hubbert was the first to analyze the phenomenon of "peak oil." Decades ago he observed how oil production—whether in a field or region—tended to follow a bell curve, rising steadily in the early years, then slowing as the most productive wells played out and new drilling failed to catch up. The peak, he found, occurred near the midpoint when about half of the deposits had been extracted. In 1956, Hubbert drew on these observations to correctly predict the 1970 peak in U.S. petroleum production.

When will the world's oil flows crest? Estimates vary, but a growing number of experts believe the peak is at hand. One prominent geologist, Colin Campbell, whose projections are displayed on this poster, says global oil production likely peaked in 2008. Other forecasts place the peak somewhere between 2020 and 2025. By almost any measure, we are within a few years of entering the second half of the Oil Age—an era marked by ever-shrinking supplies of man's most precious commodity.

Is the world ready for peak oil? One influential report suggests that industrial societies should take action decades in advance of the peak to avoid major disruptions. For industrial societies that depend on oil for everything from transportation and heating to manufacturing and food production, time is running out. Whether we can develop substitutes soon enough to sustain our way of life is a question that looms larger every day.

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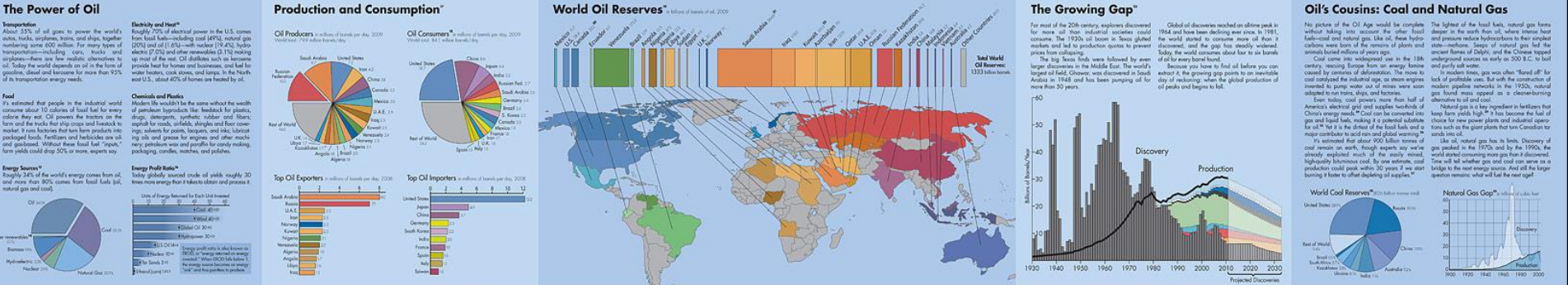
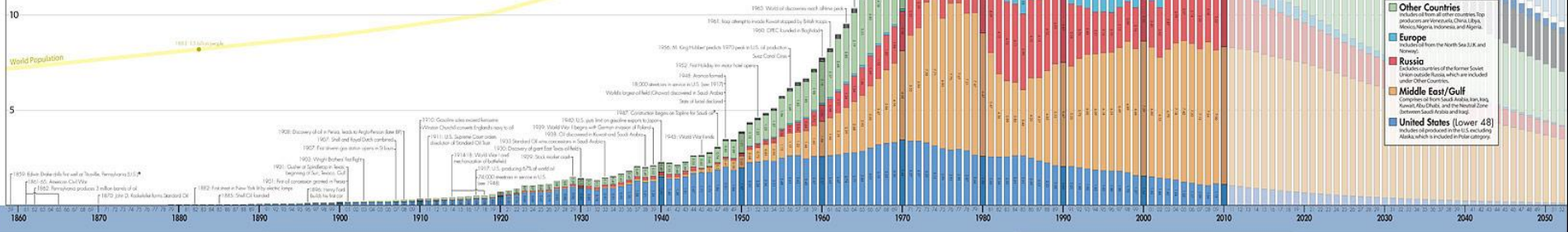
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РЕЗУЛЬТАТ ОГРАНИЧЕННОСТИ РЕСУРСОВ



Василий Верещагин, «Апофеоз войны», 1871.

ПОСЛЕДНИЙ ДЕНЬ ПОМПЕИ

24 августа 79 года, ~ 2000 погибших



ЕСТЕСТВОЗНАНИЕ для ИСТОРИКОВ

- система знаний и деятельности, объектом которых является ПРИРОДА – часть бытия, существующая по законам, действующих без участия активности людей
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набор базовых знаний о природе для адекватного понимания глобальных проблем человечества и сценариев его развития



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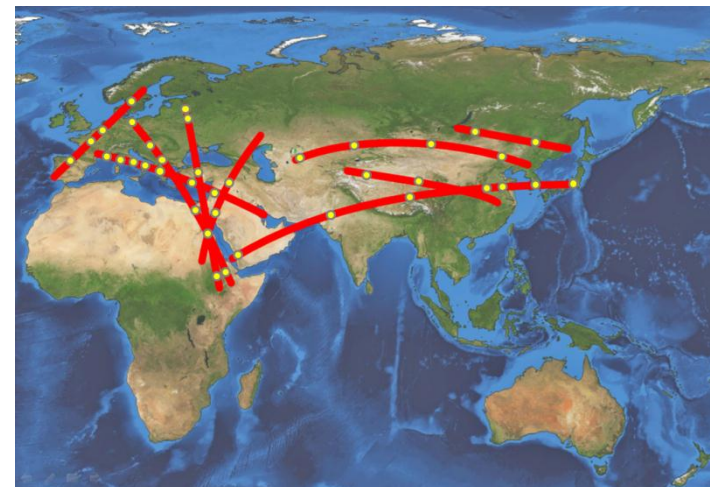
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МИЛОВ
Леонид
Васильевич
(1929 - 2007)



ПРИРОДНО-КЛИМАТИЧЕСКИЙ ФАКТОР И ОСОБЕННОСТИ РОССИЙСКОГО ИСТОРИЧЕСКОГО ПРОЦЕССА



ГЕОГРАФИЧЕСКИЙ ДЕТЕРМИНИЗМ

географические условия
предопределяют специфику
экономической, социальной и
политической жизни государств,
формируют национальный дух и
национальный характер

- **ГЕРОДОТ:** род занятий населения
зависит от природных условий
(скотоводство скифов, земледелие
славян)
- **ГИППОКРАТ:** поделил Ойкумену на
три полосы – холодную, умеренную и
жаркую – их жителям свойственны
разные особенности
- **Ж. Боден, Ш.Л. Монтескье, К.Риттер,
Ф. Ратцель** развивали идеи
«географического контроля» в разных
направлениях – инвайронментализм –
вульгарный географизм

ГЕОГРАФИЧЕСКИЙ ИНДЕТЕРМИНИЗМ

или

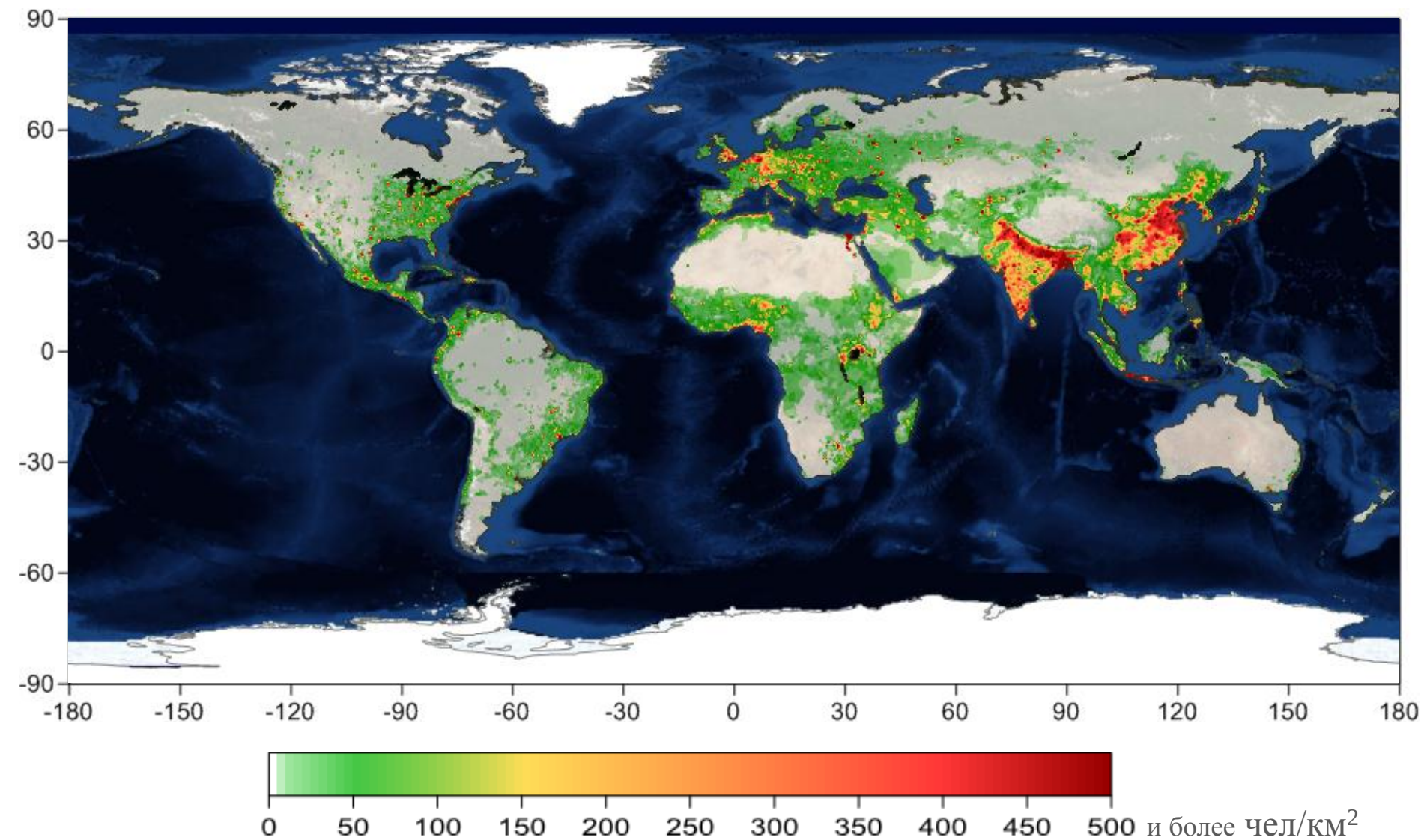
ГЕОГРАФИЧЕСКИЙ НИГИЛИЗМ

Природа предоставляет
человеку множество
возможностей и свободу
выбора. Человек преобразует
природу в техносферу
(водохранилища, переброска
рек, мелиорация и др.)

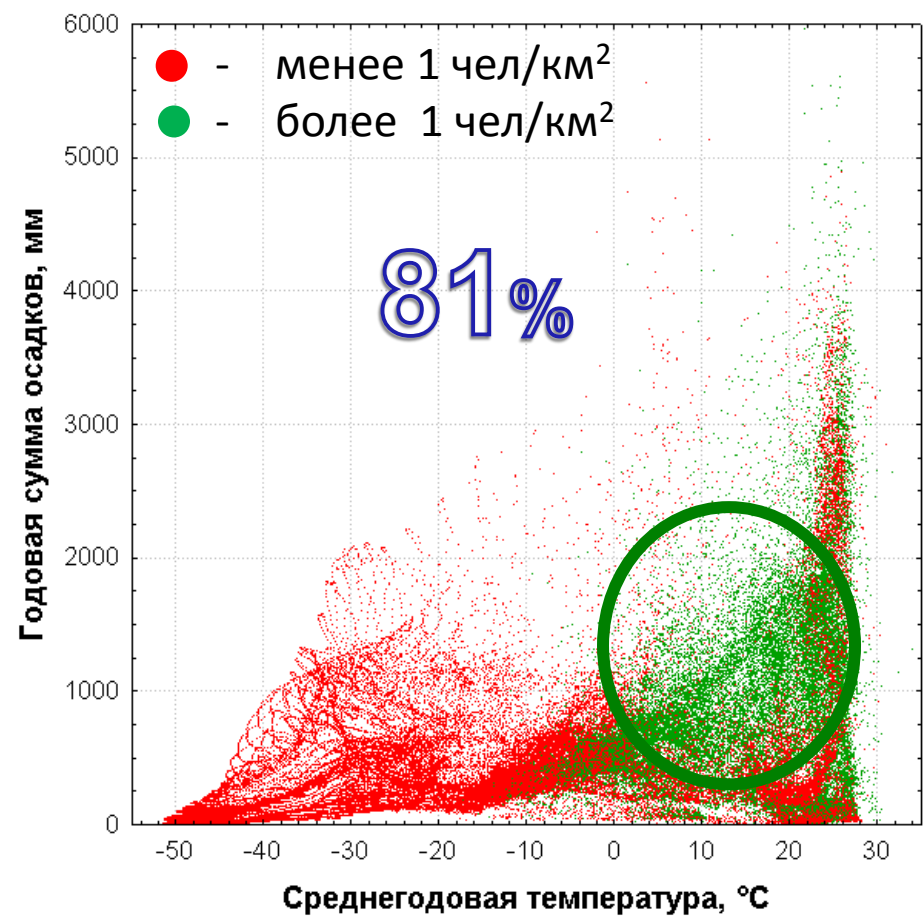
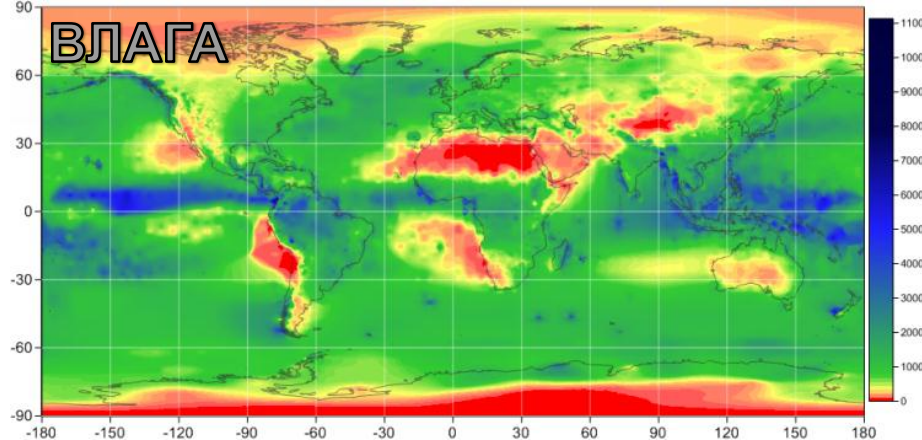
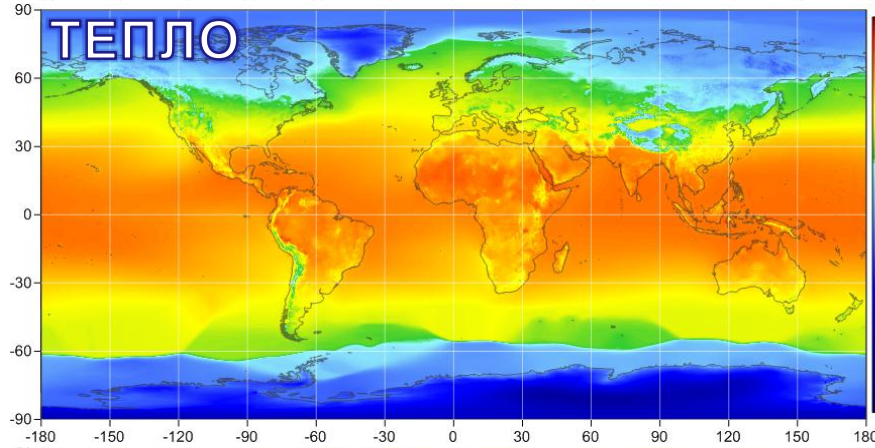
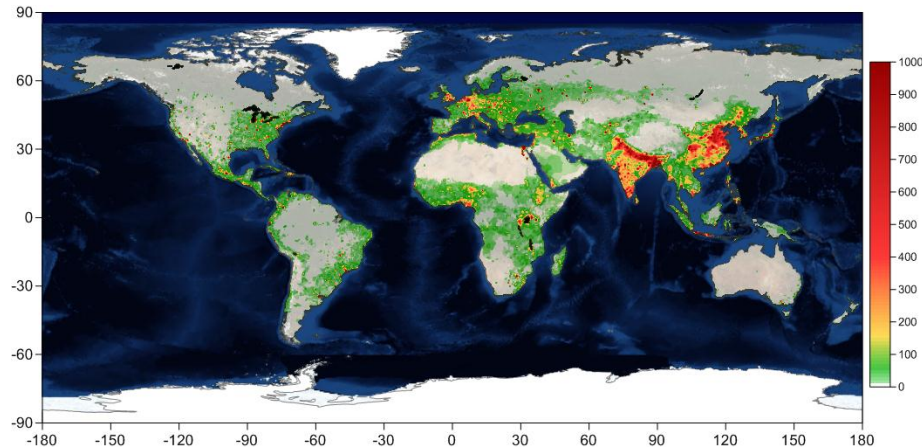
географическая среда –
ограничивающее и изменяющее
деятельность людей начало;
вместе с тем важное значение при
выборе того или иного пути
развития признается за
историческими условиями.

ГЕОГРАФИЧЕСКИЙ ПОССИБИЛИЗМ

ПЛОТНОСТЬ НАСЕЛЕНИЯ

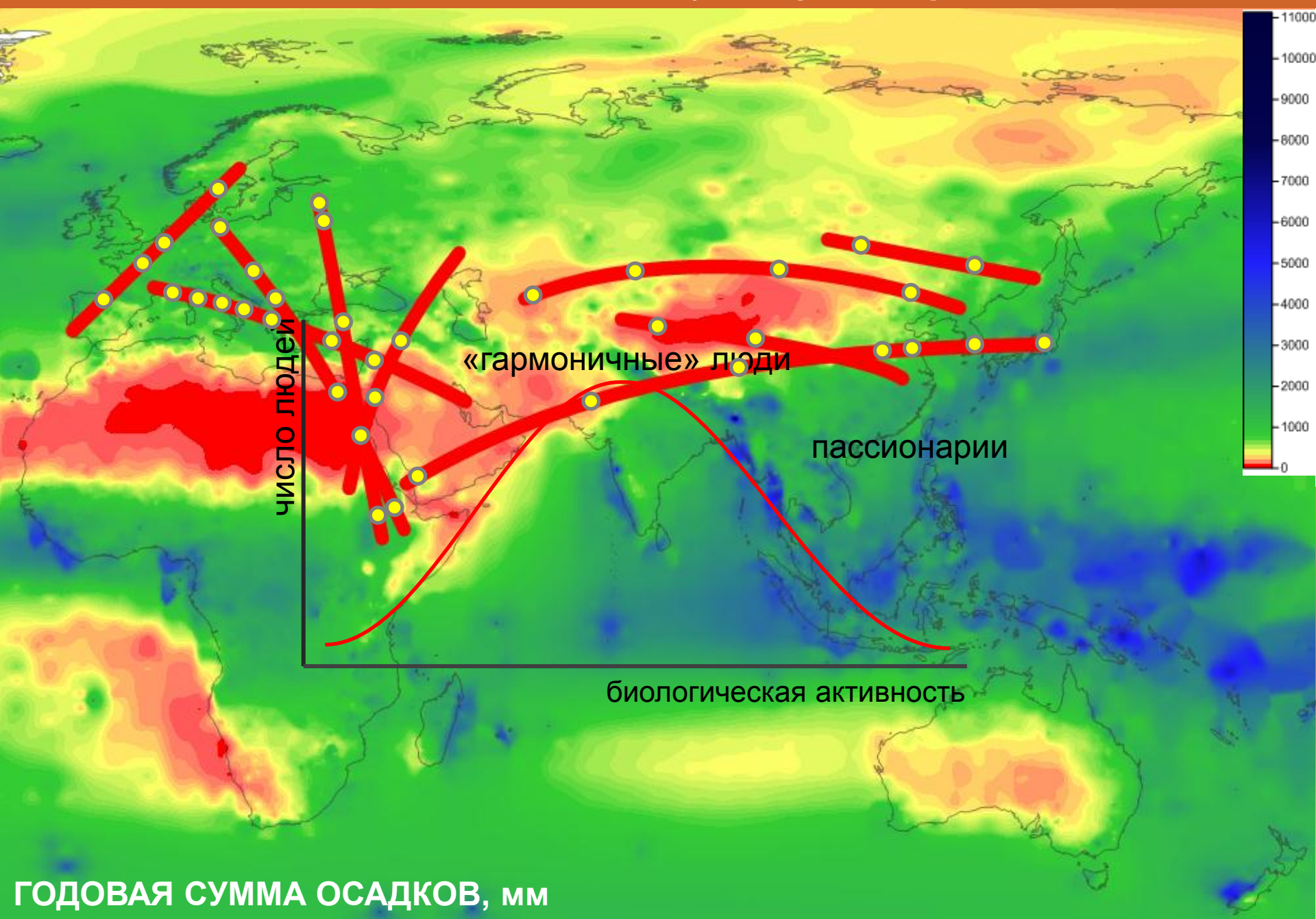


ОБЩЕСТВО И ПРИРОДНАЯ (ГЕОГРАФИЧЕСКАЯ) СРЕДА

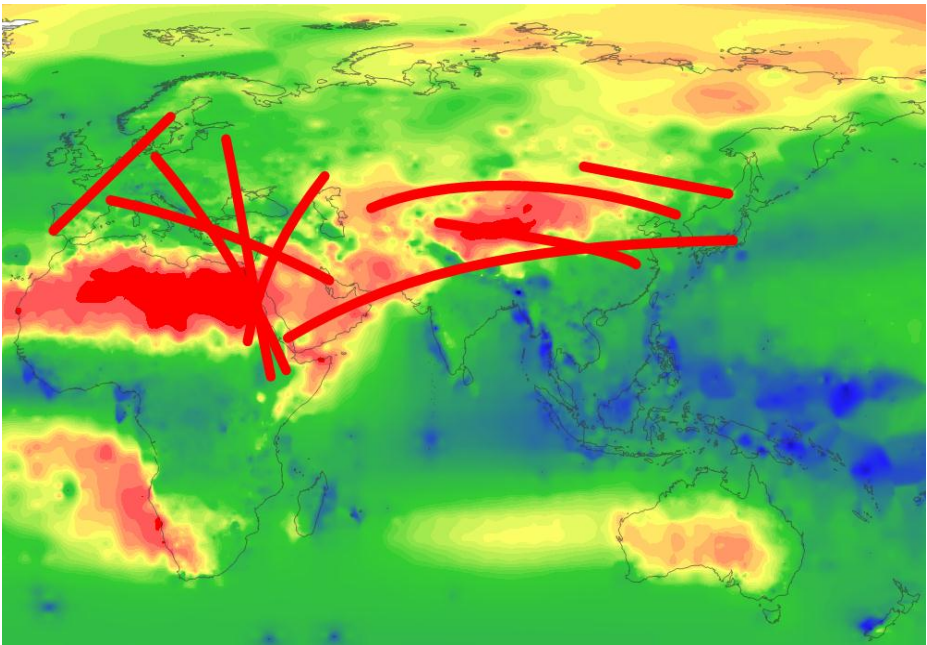
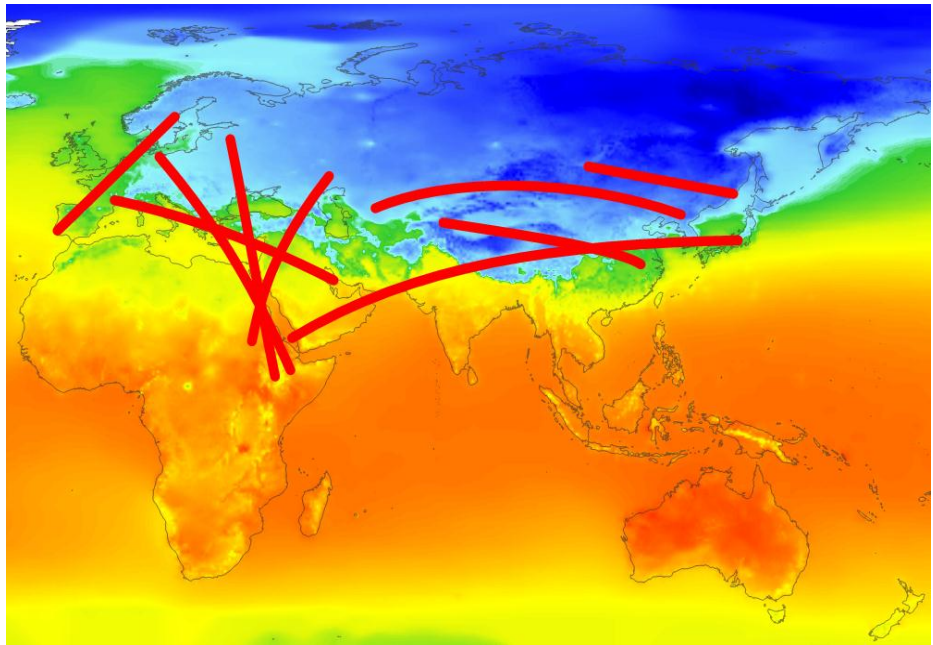
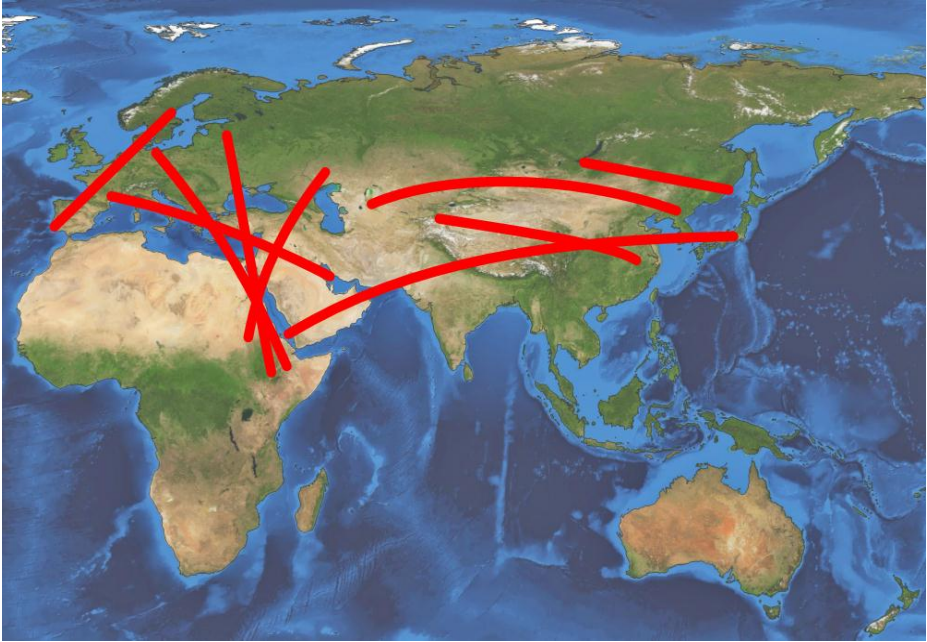
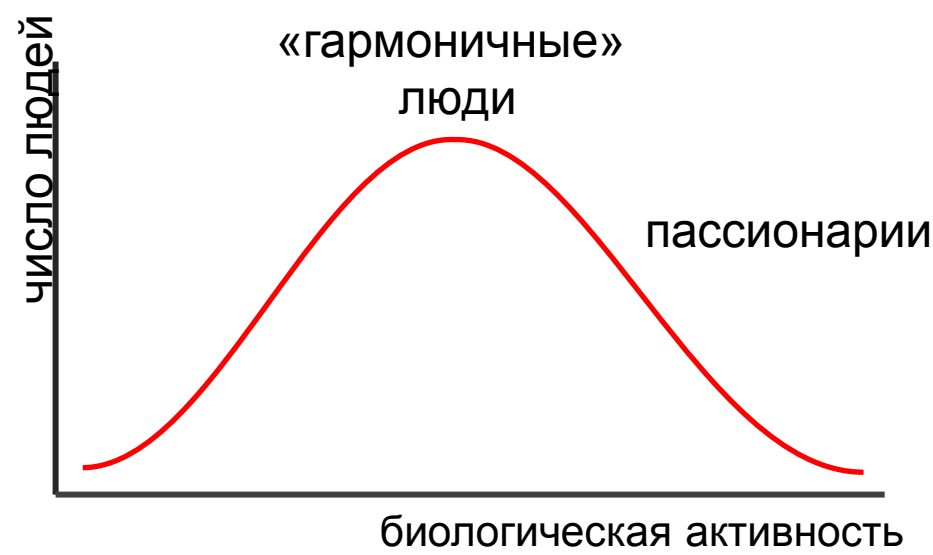


Среднегодовая температура воздуха: 0-25°C
Сумма осадков: 300 – 2000 мм

ПАССИОНАРНАЯ ТЕОРИЯ ЭТНОГЕНЕЗА (Лев Гумилев)



ПАССИОНАРНАЯ ТЕОРИЯ ЭТНОГЕНЕЗА (Лев Гумилев)



ЕСТЕСТВОЗНАНИЕ для ИСТОРИКОВ

- система знаний и деятельности, объектом которых является ПРИРОДА – часть бытия, существующая по законам, действующих без участия активности людей
- элемент общей культуры человечества, один из основных показателей уровня развития цивилизации

Как компонент общего высшего образования:

набор базовых знаний о природе для адекватного понимания глобальных проблем человечества и сценариев его развития

Как компонент специального образования:

Набор базовых знаний о природе для объяснения территориальной дифференциации человеческого общества в его историческом развитии

