

Policy tools, strategies and approaches to combating desertification in China: local, provincial, national levels

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Outline

Review on policy tools, strategies and approaches

Successful models of combating desertification

Scientific research on combating desertification

Suggestion on DSS control in Mongolia

Policy tools, strategies and approaches

Policy tools, strategies and approaches

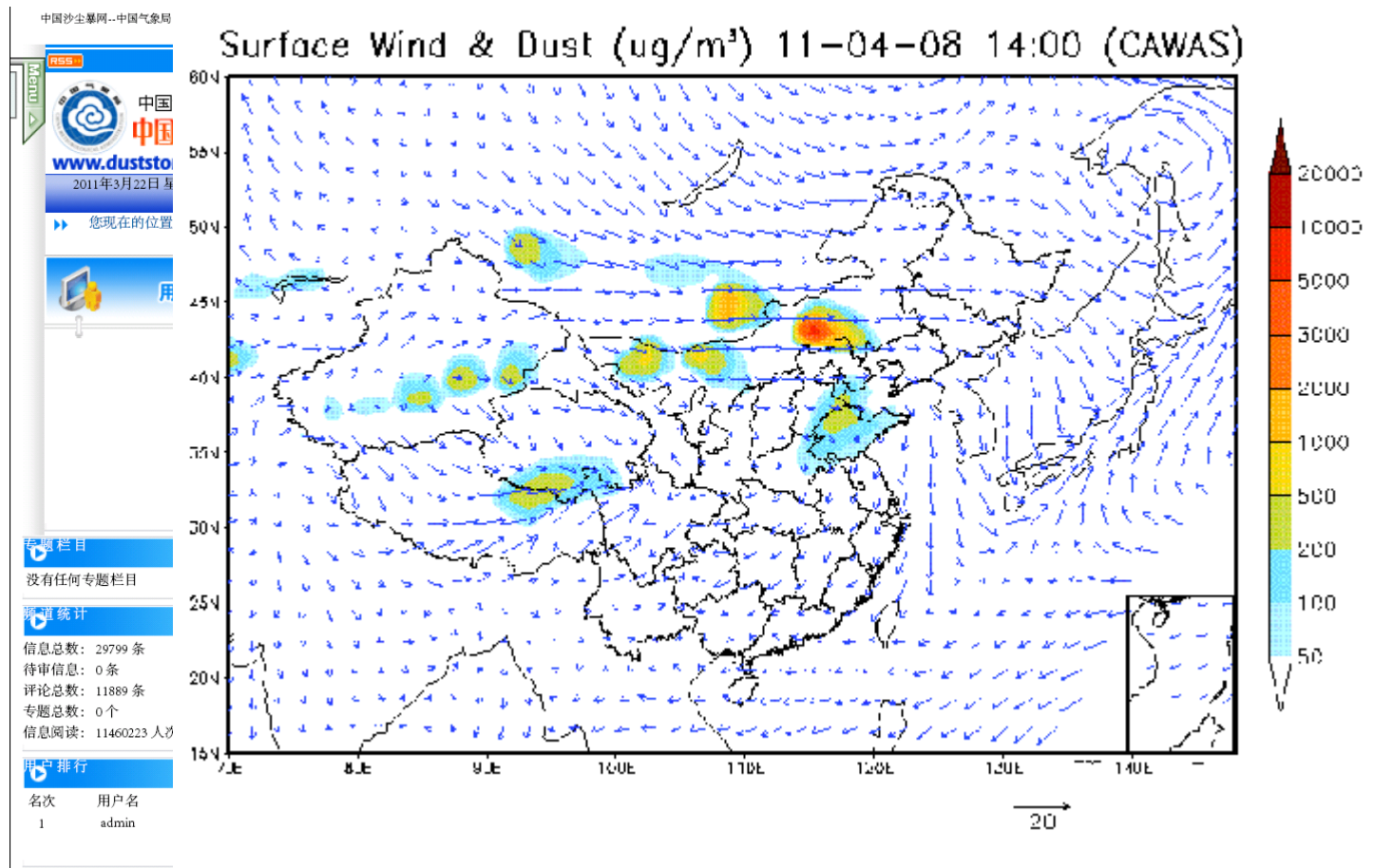
At national level:

- 防治荒漠化作为可持续发展的重要内容已列入国民经济和社会发展规划；
Desertification combat for sustainable development has been incorporated into the National Socio-economy Development Plan;
- 建立沙尘暴监测与预警网络。
DSS monitoring and early warning network.



Policy tools, strategies and approaches

At national level:



DSS monitoring and early warning network

Policy tools, strategies and approaches

At provincial level:

- 为国家重点生态工程建设提供配套资金；
Co-finances for the national ecological restoration programs;
- 组织实施区域生态工程建设与环境治理项目。
Implements the local ecological restoration projects.

Policy tools, strategies and approaches

At local level:

- 制定税收优惠政策；
Preferential taxation policies for protecting ecological environment;
- 提供治沙贴息贷款；
Providing discount loans for combating desertification;
- 提供钱粮补助；
Household who has converted croplands to forests and grasslands will get subsidies by cash and food;
- 组织义务植树。
Voluntary tree-planting.

Policy tools, strategies and approaches

依法治沙

According to laws

科学治沙

Relying on sci. & tech. progress

综合治沙

Synthesized measures

Policy tools, strategies and approaches

依法治沙

《中华人民共和国环境保护法》

Environmental Protection Law of the People's Republic of China

《中华人民共和国森林法》

Forest Law of The People's Republic of China

《中华人民共和国草原法》

Grassland Law of the People's Republic of China

《中华人民共和国水土保持法》

Law of the Peoples Republic of China on Water and Soil Conservation

《中华人民共和国防沙治沙法》

Law of the Peoples Republic of China on Prevention and Control of Desertification

Policy tools, strategies and approaches

依法治沙

建立部门协调机构、监测体系和法律保障体系，健全防沙治沙能力建设的培训体系，为防治荒漠化制订优惠政策。

A series of programs have been set up, with all-level government coordinating system, monitoring system and legal guaranteeing system; associated with the training systems for capability building, and preferential policies formulated on combating desertification.




Policy tools, strategies and approaches

科学治沙



建设人工—天然乔、灌、草复合植被，保护荒漠生态系统；
Construct complex of artificial and natural vegetation, reserve desert ecosystems;



禁止滥樵采、滥放牧、滥开垦，封育与植被重建结合，适地适树(草)，亦荒则荒。



Prohibit over felling, overgrazing and excess farmland reclamation, combine the approaches of enclosure with revegetation according to the environment.



Policy tools, strategies and approaches

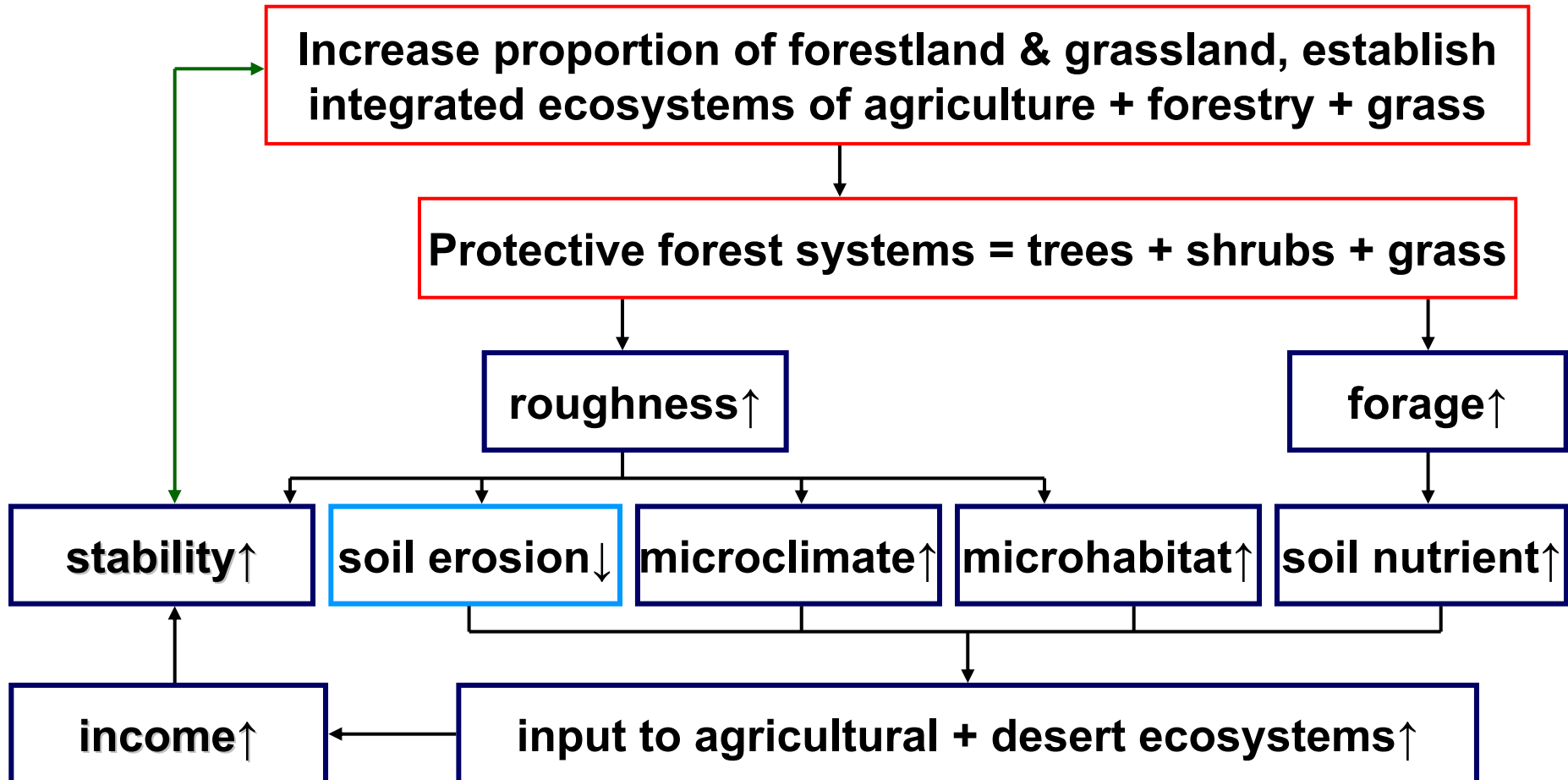
科学治沙

以保护、恢复和重建植被为主，围封育林育草，建立自然保护区(禁垦、禁伐、禁牧、禁猎)；实施人工造林种草，建立农田防护林、牧场防护林、防风固沙林、水土保持林、水源涵养林，建成乔灌草结合，带片网相连的复合生态系统。

Construct integrated ecosystems of protecting, rehabilitating and restoring vegetation. Set up natural reserve parks according to laws to forbid excess farmland reclamation, over felling, overgrazing and overhunting. Afforestation of shelterbelts for farmland and pasture, windbreaks and sand control, soil erosion conservation forest, water conservation forest.

Policy tools, strategies and approaches

科学治沙



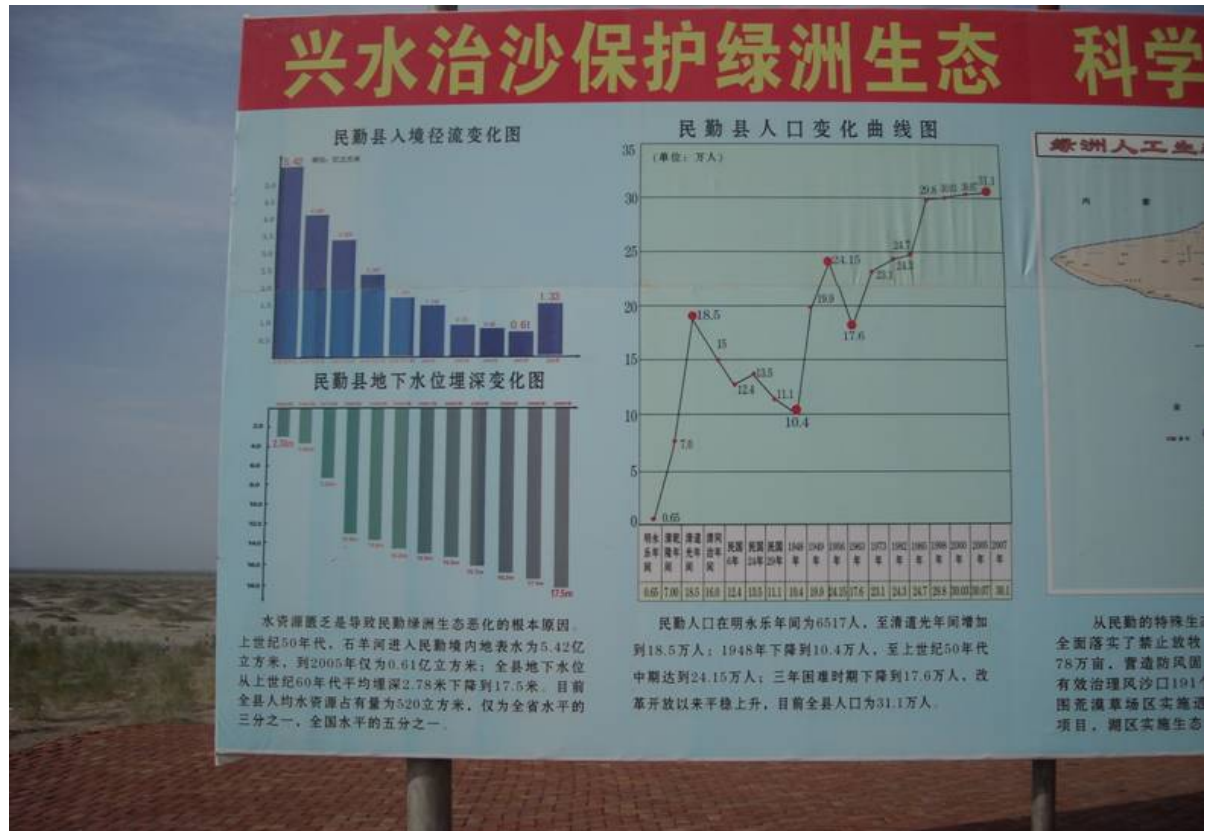
Policy tools, strategies and approaches

综合治沙

1. 合理利用水资源

成立流域水资源分配和管理机构，加强水资源统一规划和管理，科学管水、配水。

Establish watershed organization on integrated water resource allocation and management.



Policy tools, strategies and approaches

综合治沙

2. 利用生物和工程措施构筑防护林体系



Construction of checkerboard protections to stabilize shifting sand dune.
Shrubs are planted within the enclosure of the checkerboard.

Policy tools, strategies and approaches

综合治沙

3. 调整产业结构

建立以综合治理、开发，培育龙头产业为主的产业体系。改变落后的生产方式，变粗放、分散和低效益经营为集约、规模和高效益经营。

Construct industrial systems aiming at comprehensive treatment, development, foster and develop flagship industry. Change the out of date production style, convert the extensive, decentralized and inefficient management into intensive, large scale and efficient management.

Policy tools, strategies and approaches

综合治沙

4. 采取综合措施，多途径解决当地能源问题

优化农牧区能源结构。
Optimize the energy structure in
agricultural and pastoral regions.



Policy tools, strategies and approaches

综合治沙

5. 减轻土地压力

建设新绿洲，通过生态移民缓解人口压力；建设产业基地，促使大量过分依赖于土地的农牧民向第二、第三产业转移；通过办教育和技能培训，提高农牧民的文化科技水平。

Relieve the population pressure by migration to new oasis; establish industry bases to transfer workers of primary sector into the secondary and tertiary sector; improve the cultural and scientific level of farmers and herders by education and vocational training.

Policy tools, strategies and approaches

综合治沙

6. 实施生态补偿

建立防沙治沙生态效益补偿制度。

Establish the system of ecological benefit compensation.

7. 完善问责制度

强化领导干部防沙治沙目标责任制。

Strengthening the responsibilities of the leadership on combating desertification.

Successful models of combating desertification

Successful models of combating desertification

就地取材建设防风沙障。

Windbreaks fronted the protected area constructed by indigenous material, such as straw, willow branches, bamboo, reed stalks.



草方格规格与植被栽植。

Straw checkerboards was arranged roughly in one-meter square, straw are pressed into the sand, it increases surface roughness as the stalks stand four to six inches above the ground, shrubs were planted in the center of straw checkerboard.



Successful models of combating desertification

粘土沙障。

Clay deposits from the hollows between the sandy dunes are successfully used to erect checkerboard protections.

高岭土/膨润土保水固沙。

Kaolin/nano clay mixture was sprayed on the dune surface.



Successful models of combating desertification

交通沿线沙丘固定。

Large areas of shifting sand dune have been stabilized along the railway by construction of straw checkerboard and revegetated ecosystem.



渠道防护体系。

Protective systems along canals.



Successful models of combating desertification

灌丛防护体系分隔沙丘。

In the area where dunes are relatively low and groundwater is available in the hollows between the dunes, shrubs are planted to isolate dunes.

荒漠化草原带地表粗糙度显著升高。

In the desert steppe and steppe zones, rows of shrubs are planted on the lower windward slopes of the dunes to increase vegetation cover and the surface roughness, hence, to reduce wind velocities and to decrease the amount of sand carried by the wind current.



Successful models of combating desertification

沙丘背风坡与丘间低地灌丛。

Shrubs planted in patches on the lower part of leeward slopes of dunes and in the hollows between dune crests to break the wind force.



豆科饲料基地与防护林建设。

Leguminous fodder crops are planted under the trees in the hollows between dunes of the desert steppe zone in order to ameliorate the soil and to prevent stabilized dunes from becoming active again.



Successful models of combating desertification



地下水丰富地区防护林建设。

In the flat area with a relatively higher groundwater table, saplings are planted as barriers against shifting sand.

Successful models of combating desertification



围封草场建设。

Artificial enclosed pastures was set up to make fodder base.

Successful models of combating desertification



保护天然植被与重建荒漠植被并举。

The effective method of fixing active dunes is to protect the natural vegetation cover and plant xerophytic vegetation.

Successful models of combating desertification



退耕还林(草)。

Conversion of cropland to grassland, convert the cultivated land for forestry and pasture.

Successful models of combating desertification

National Nature Reserve Park



建立自然保护区。

Apart from establishing sand control shelterbelts to block shifting sand, the natural vegetation must be protected properly.



Successful models of combating desertification



戈壁沙漠可持续发展。
Sustainable use of land and water
resources for reclamation of Gobi
desert.



Successful models of combating desertification



沙地开发。

Advanced drip irrigation system for reclamation of desert land.

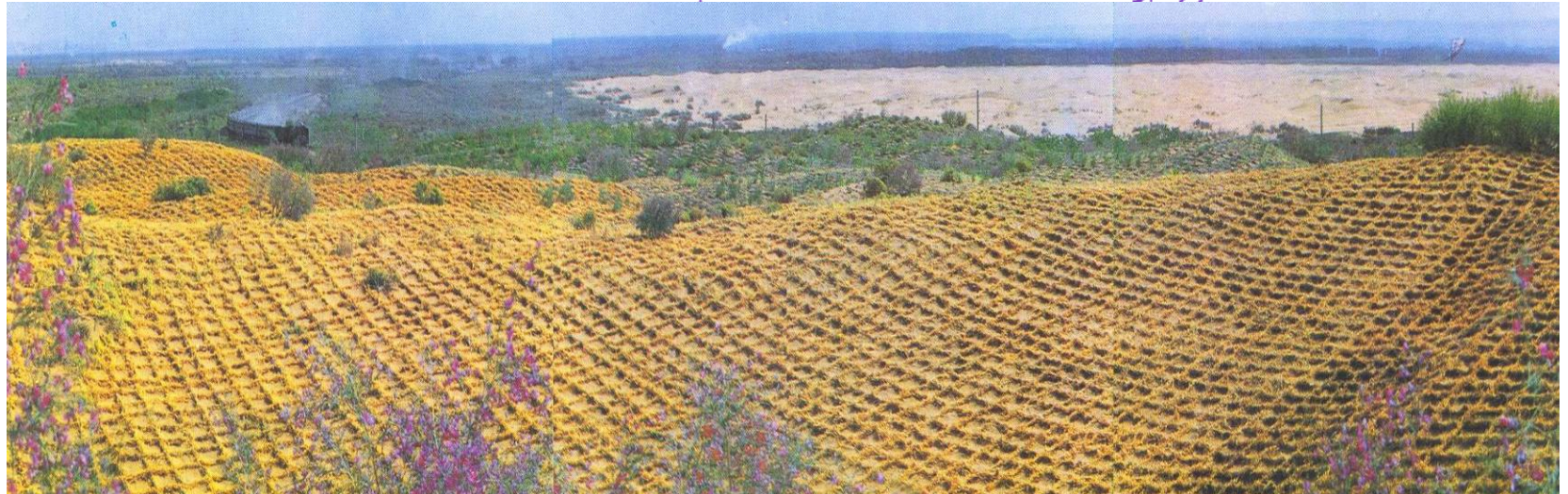


Successful models of combating desertification



Scientific research on combating desertification in the Tengger Desert, China

Scientific research on combating desertification



Scientific research on combating desertification

A satellite-style map of the Tengger Desert region. The desert is shown in shades of pink and tan, with a prominent blue river winding through it. A green, vegetated area on the right side of the map is labeled 'Shapotou Station'. The text 'Tengger Desert' is also visible on the map.

Research Scopes

- Dust and sandstorm physics and desert environments
- Aerosols and its climatic effects
- Soil hydrology and ecohydrology
- Vegetation dynamics and restoration ecology
- Biological soil crusts and soil ecology
- Plant stress physiology and biotechnology
- Biodiversity and conservation biology
- Research and extension on efficiency development technologies in sandy area

Scientific research on combating desertification



The stabilized desert ecosystems are dynamic in development and full of biotic activity.

Scientific research on combating desertification

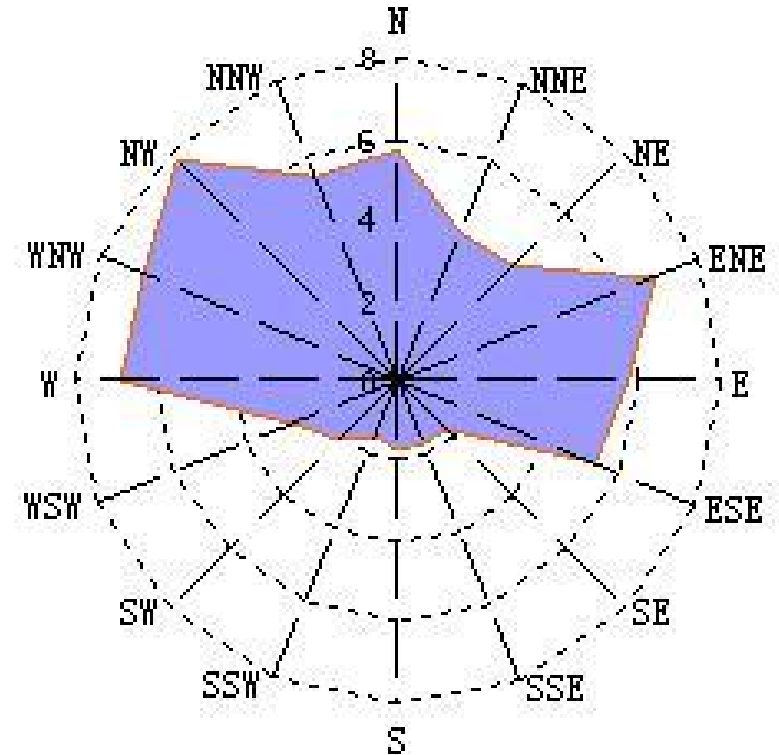
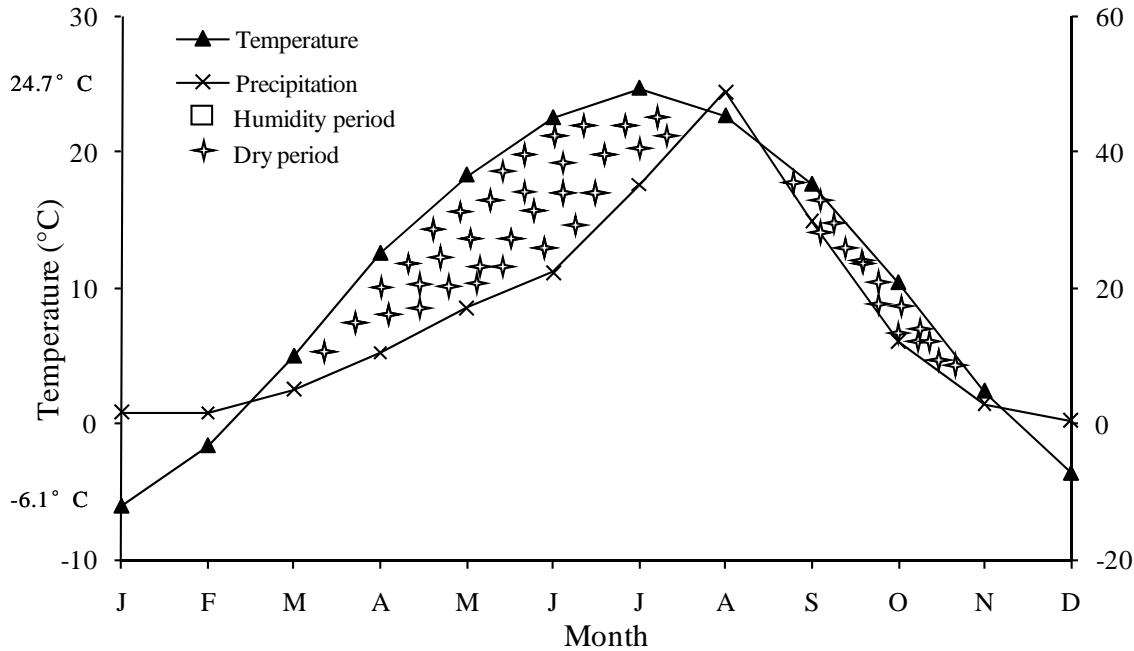


Surface composed of highly heterogeneous mix of aeolian material, plant mounds, interspaces and biological soil crusts.

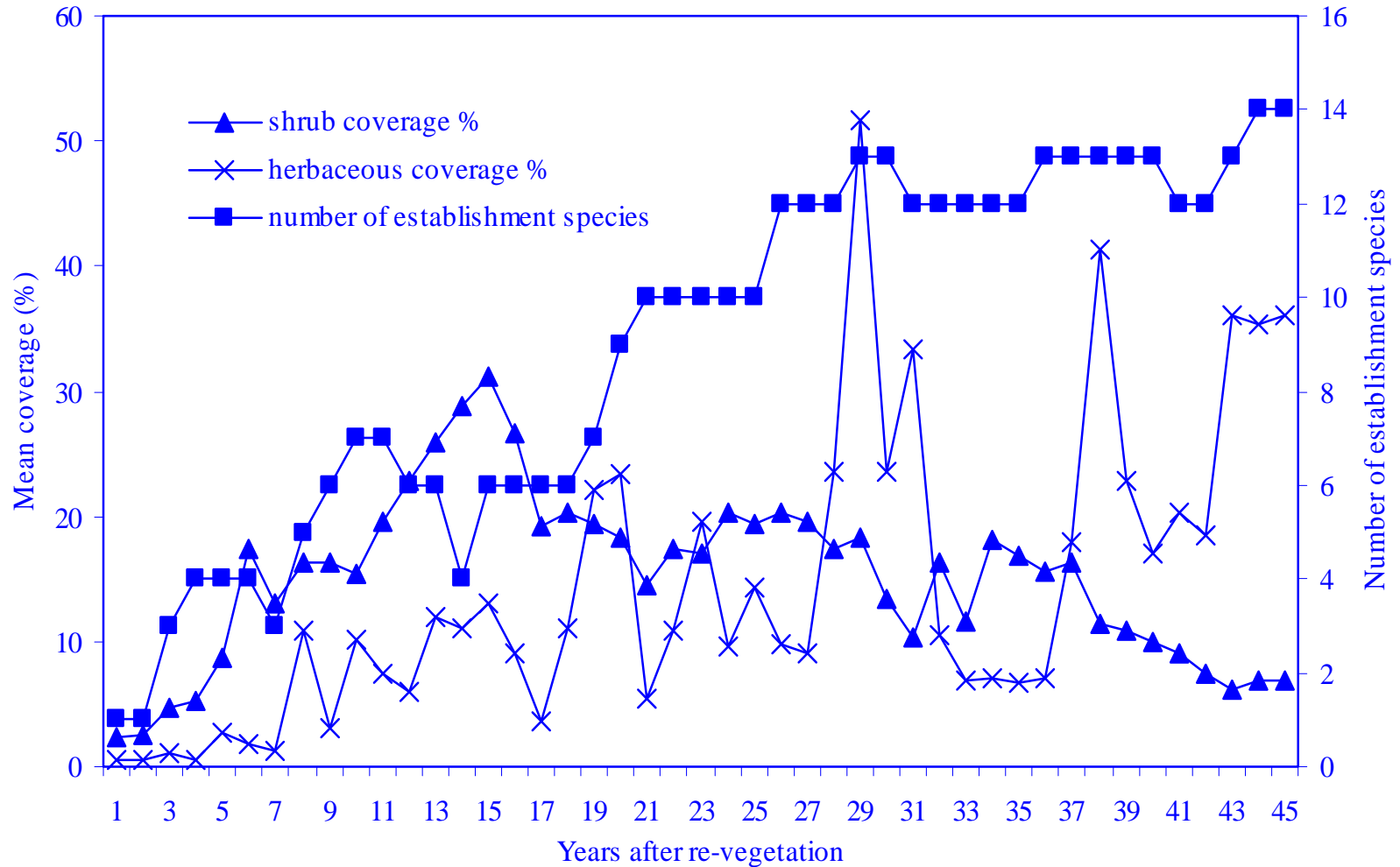
Scientific research on combating desertification

Shapotou 1300m N37° 32' E105° 02'

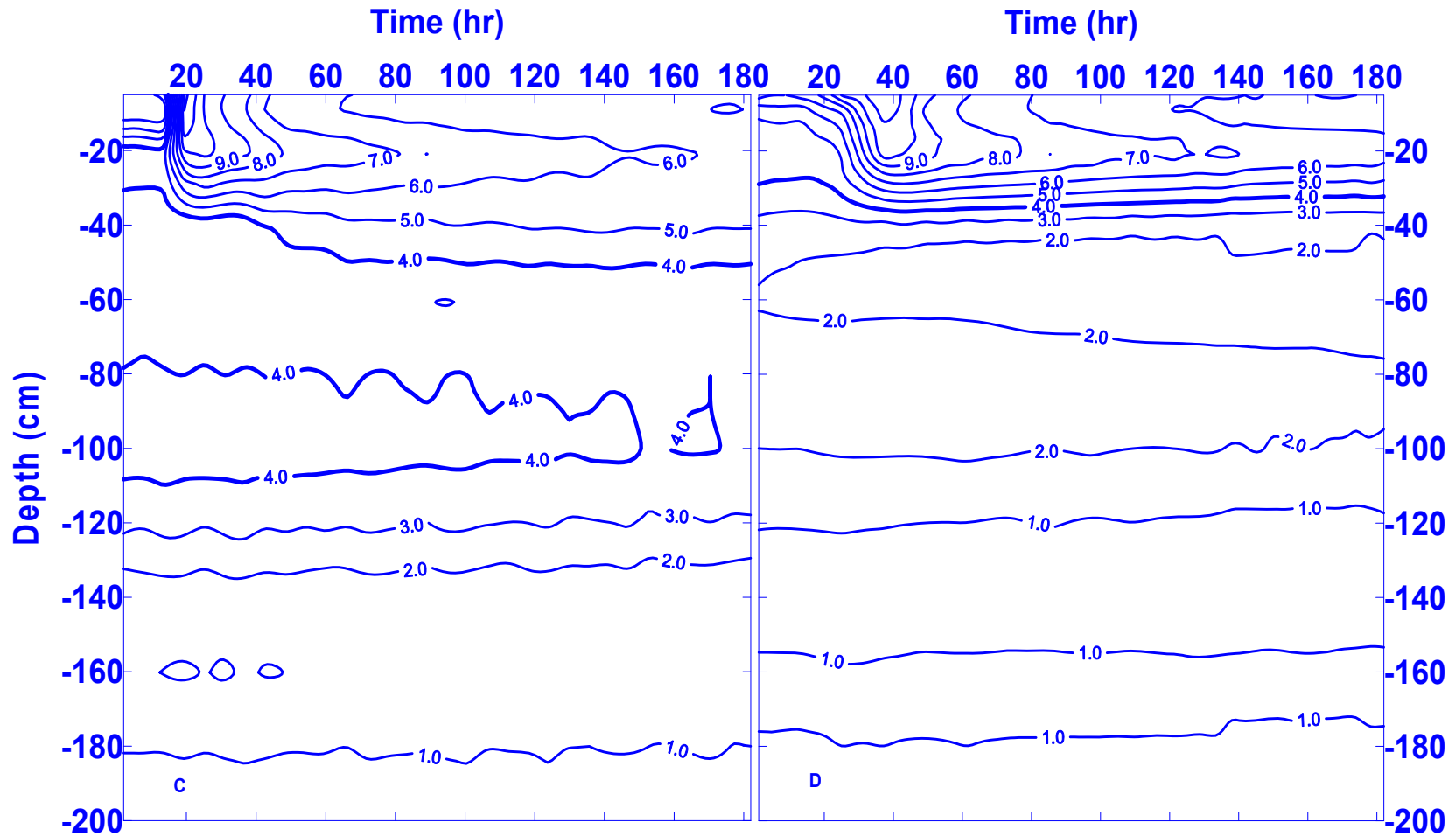
10.4° C 188.7 mm (1956-2010)



Scientific research on combating desertification

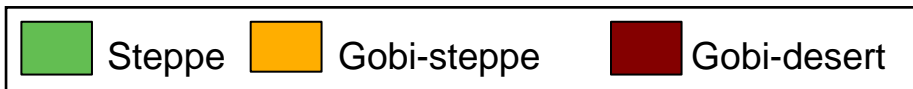
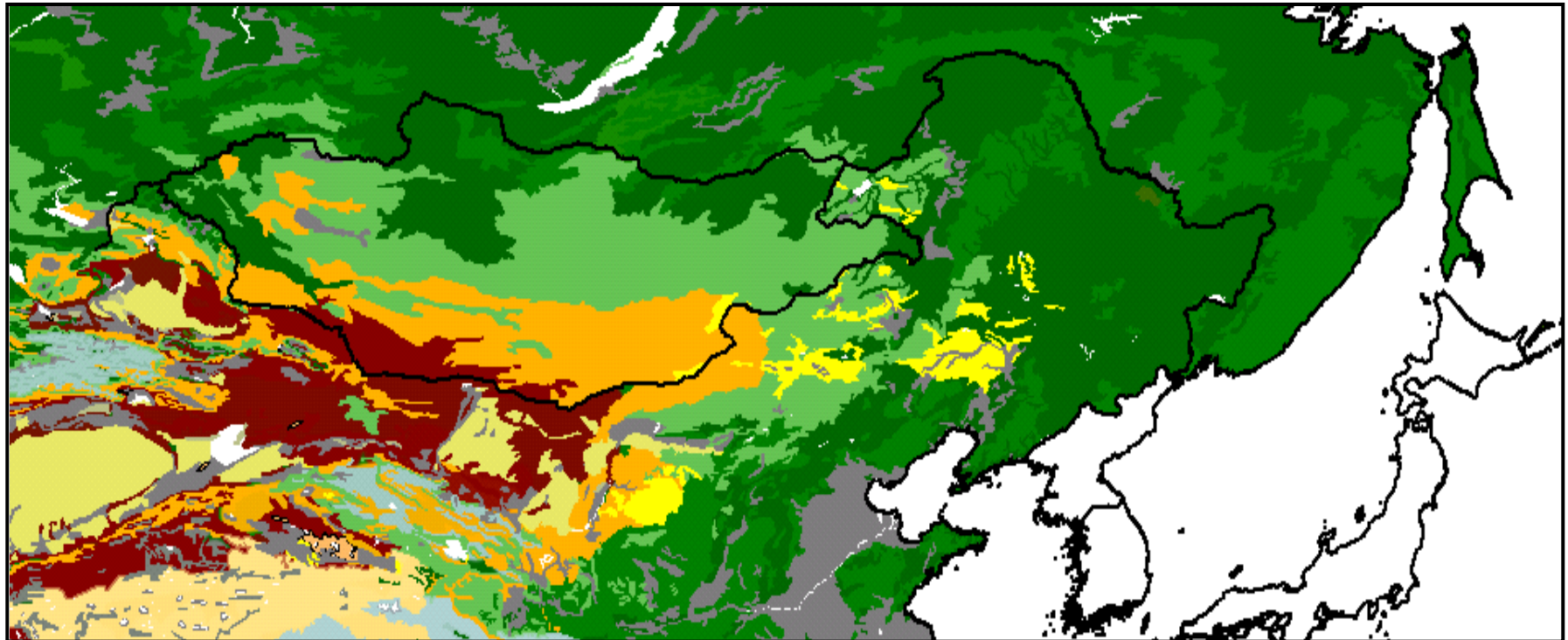


Scientific research on combating desertification



Suggestions on DSS control in Mongolia

Suggestions on DSS control in Mongolia



(FAO, 1999)

Suggestions on DSS control in Mongolia

Make a better understanding of the pilot area

1. What are the natural conditions

wind, T, RH

soil properties

surface and groundwater

.....

2. What are the livestock carrying capacity

3. New energy

Wind energy

Solar energy

.....



Suggestions on DSS control in Mongolia

Make a better understanding of the pilot area

1. Life style

2. Living standard

income

expense

.....

3. Level of education

4. Women participate in public affairs

.....



Suggestions on DSS control in Mongolia

Make a better understanding of the possible measures in pilot area

1. Engineering / mechanical approaches

indigenous materials (straw, clay, kaolin/nano clay, pebble,.....)

2. Biological approaches

indigenous / introduced plant species

planting patterns

planting densities

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Thank you very much

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