

19th EΦA ROUNDTABLE

How to deal with Major Disasters – What should be the best European Response?

4-5 June 2018, Directorate General Security and Prevention, Belgium



Landscape Fires

Towards Building Holistic Approaches in Fire Management
Experiences and Prospects

Johann Georg Goldammer
Global Fire Monitoring Center (GFMC)
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Introduction (I)

In most countries of Europe landscape fire regimes are changing due to

- Land-use change – associated with rural exodus and abandonment of the rural space
- Consequently, reduced land cultivation resulting in increasing flammability of rural landscapes



Introduction (II)

In most countries of Europe landscape fire regimes are changing and wildfire impacts increasing due to

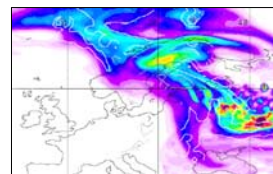
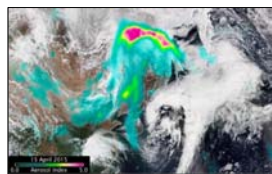
- Weather extremes associated with regional climate change (increasing severity and duration of droughts)
- Increasing vulnerability of society to fires affecting rural and peri-urban settlements



Introduction (III)

Specific observations in the first Decade of the 2000s

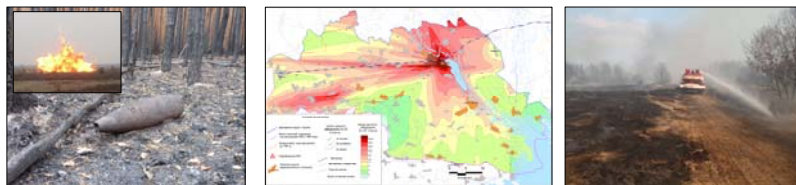
- Countries that traditionally had limited wildfire problems are subjected to increasing fire occurrence
- Transboundary impacts and sometimes extended large wildfires may temporarily exceed national control capabilities have prompted countries to intensify cross-boundary cooperation in fire management



Introduction (IV)

Specific observations in the first Decade of the 2000s

- Fires burning on radioactively, chemically and otherwise contaminated terrain
- Dangerous situations resulting from fires burning in areas of armed conflict and post-conflict situations: Threats by Unexploded Ordnance (UXO)



Introduction (V)

The year 2017 – globally the hottest year on record – experienced unprecedented extreme fires throughout Europe and globally

- Portugal suffered the worst fire year with more than 100 people killed
- Canada and the Western United States experienced the worst fire season since the recent decades
- Extreme blow-up of wildfires in South Africa and Chile (Jan/Feb 2017)



Global Wildfire Damages Overview – GFMC Database, 15 Nov 2017

Continent	Dead	Injured	Homes Destroyed	Homes Damaged	Evacuations
Europe	127	~575	338	84	~44,416
North America	87	347+	6,507+	10,225	~303,153
South America	15	~337	1796+	~500	~18,627
Africa	33	~72	1363	391	~11,172
Asia	13	~466	302	109	~4,353
Australia/ Oceania	6	10	142	27	~6,019
YTD 2017 Global Total	281	1,807	10,448+	11,336	376,568

Cross-sectoral dimension of fire management (I)

All over Europe wildfires and land-use fires affect the intermix of natural and cultural landscapes

- Natural ecosystems: Forests and other protected areas
- Agricultural and pasture lands
- Farms, villages and suburbs
- Infrastructures (incl. critical infrastructures), traffic
- Waste deposits and otherwise contaminated lands



Cross-sectoral dimension of fire management (II)

Fires are burning across the sectoral responsibilities of land owners and land management agencies:

Typically responsible agencies

- Natural ecosystems: Forests and other protected areas
- Agricultural and pasture lands
- Farms, villages and suburbs
- Infrastructures (incl. critical infrastructures), traffic
- Waste deposits and otherwise contaminated lands
- Military terrain
- Forest Service
- Park Service
- Ministry of Agriculture
- Ministry of Interior
- Crisis Management
- Ministries for Public Health and Environment
- Ministry for Defense

Cross-sectoral dimension of fire management (III)

International / Transboundary Issues: Bilateral and international agreements / protocols / mechanisms (I)

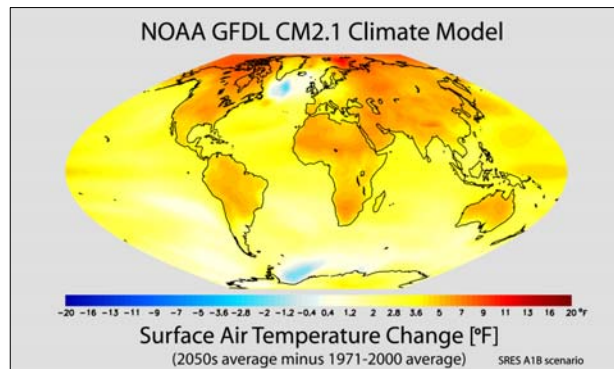
- Border-crossing fires
- Border-crossing fire smoke transport affecting human health
- Long-distance transport of fire emissions
- Bilateral agreements at national and state levels
- Bilateral agreements
- UNECE Convention for Long-Range Transboundary Air Pollution (CLRTAP)



Cross-sectoral dimension of fire management (IV)

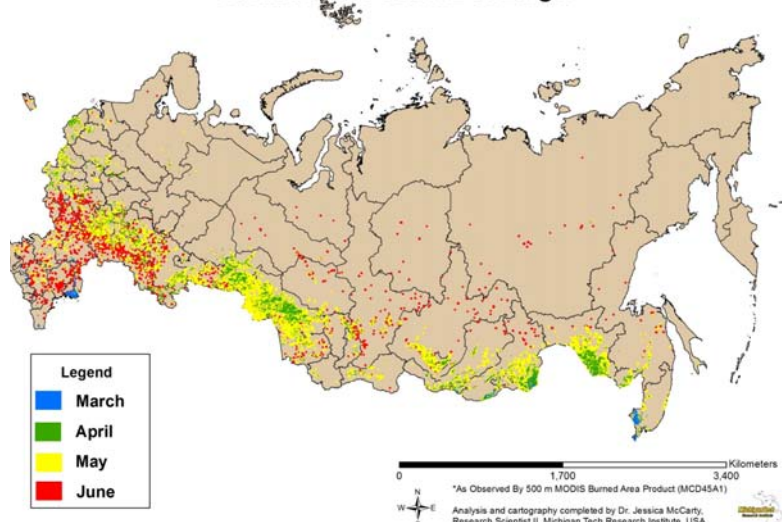
International / Transboundary Issues: Bilateral and international agreements / protocols / mechanisms (II)

- Fire emissions affecting the global atmosphere:
UN Framework Convention on Climate Change (UNFCCC)
2015 Paris Agreement



Agricultural Burning - A major source of *Black Carbon* deposits on the Arctic environment

2006 Spring Burning in the Russian Federation (All Land Cover Types) Burned Areas 500 m² or Larger







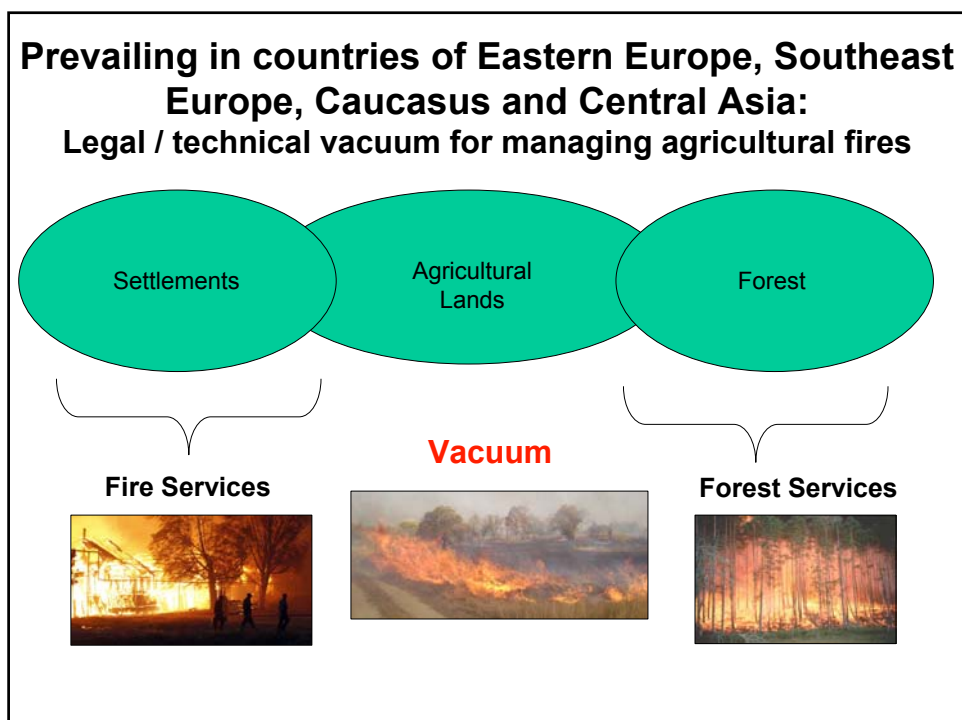
Abandonment of rural villages in Russia

2010: 3000 villages

1991-2009
27 million ha of agricultural land abandoned and subjected to fallow

Same trend in the Euro-Mediterranean Region

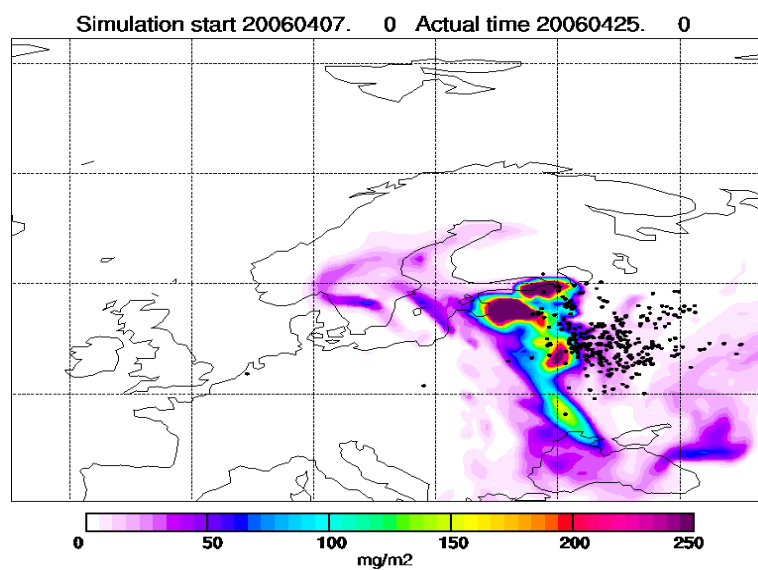




Agricultural Burning - A major source of *Black Carbon* deposits on the Arctic environment



Transport of Fire Emissions to the European Arctic
Satellite images courtesy of Norwegian Meteorological Institute

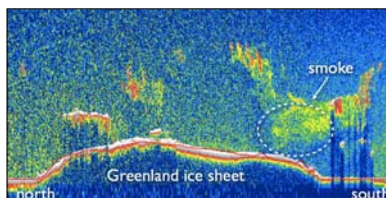


Black Carbon deposits on the Arctic Environment



Aerial photo of the Greenland ice sheet surface from mid-August, 2005.

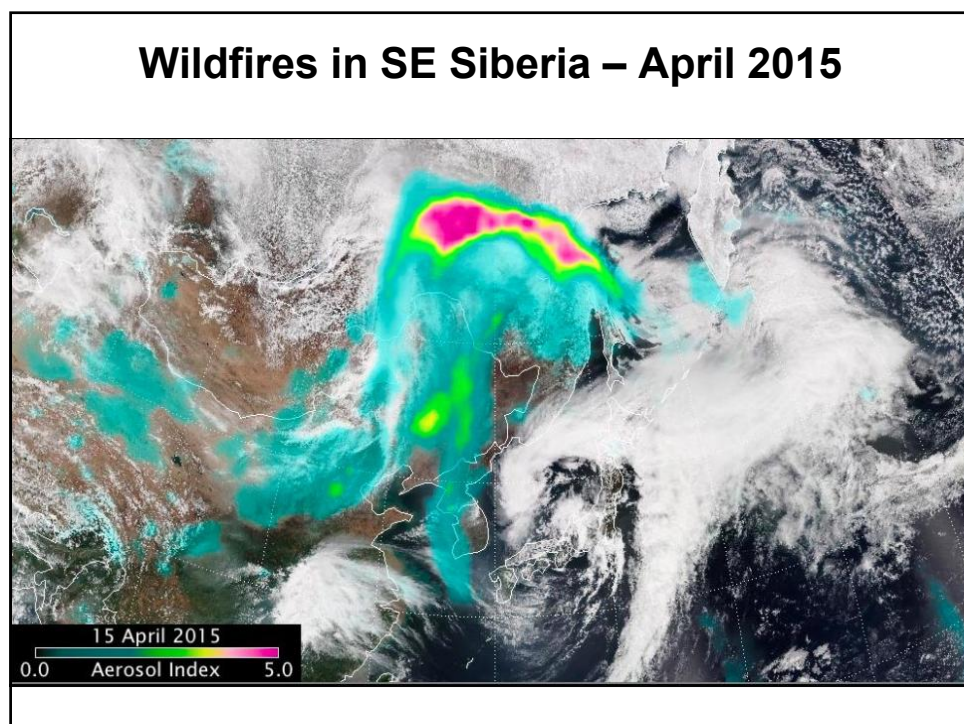
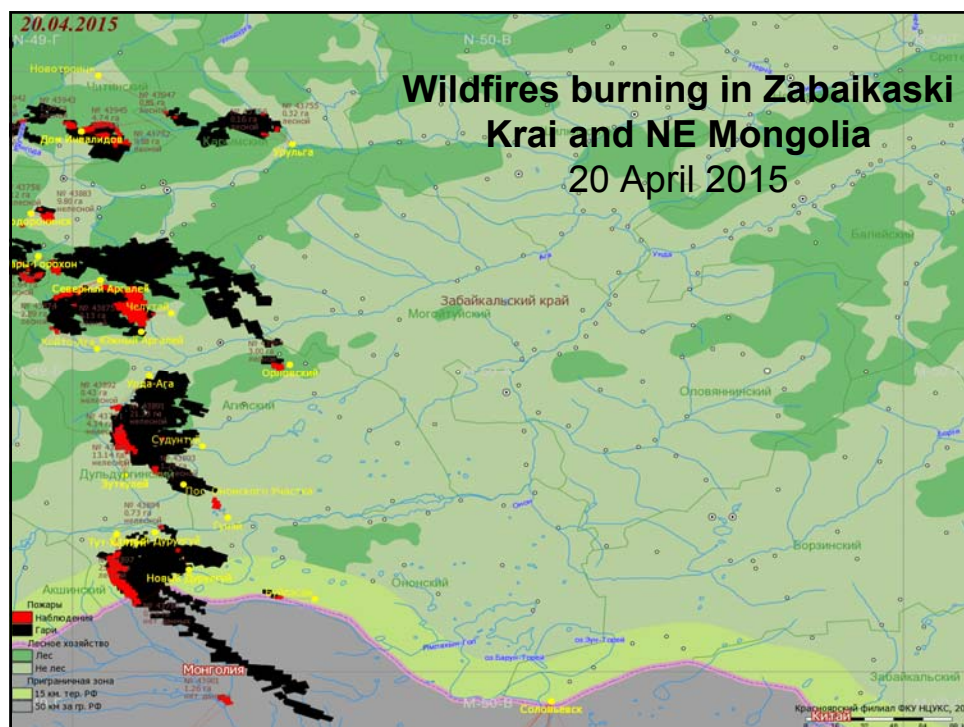
The dark areas are concentrations of light absorbing impurities. This example the impurities are some combination of dust, soot, and microbial activity.



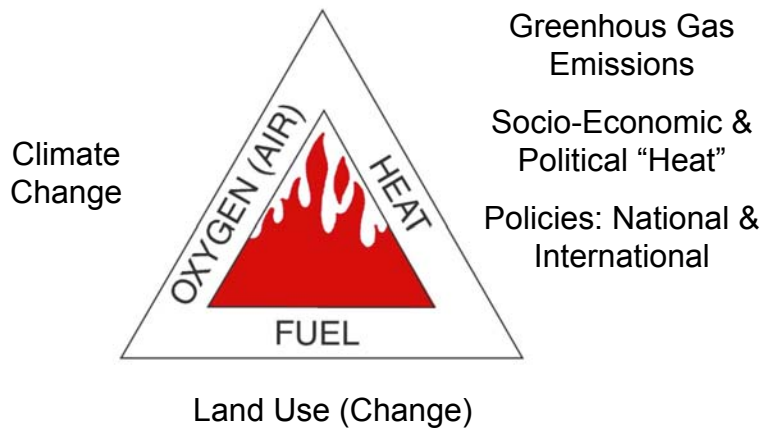
Credit: Jason Box, Ohio State University
Press release @ AGU, 07 Dec 2012

Wildfires burning in Southeast Siberia and Northeast Mongolia 14 April 2015





The Landscape Fire Triangle Determining Factors in a Changing Global Environment



Recommendations of the “**UNECE Regional Forum on Cross-boundary Fire Management**” Geneva, 28-29 November 2013 Establishment of Voluntary International Cooperation Mechanisms



Recommendations of the UNECE / FAO Forum

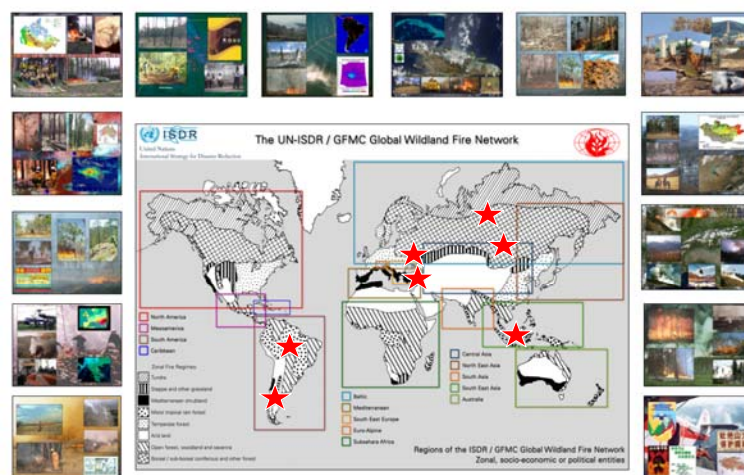
Development of the **International Wildfire Preparedness Mechanism (IWPM)**

▪ The IWPM provides a voluntary framework from which to cascade improved knowledge, good practice, experience and training globally

- Sharing of fire management expertise across borders
- Application of standard training materials
- Development of common SOPs for enhancing cross-boundary inter-operability in fire management, especially in wildfire emergencies



The Global Wildland Fire Network 14 Regional Wildland Fire Networks and 6 Regional Fire Management Resource Centers ★



Regional Wildland Fire Networks within the Global Wildland Fire Network
North America – Mesoamerica – South America – Caribbean – Mediterranean
Southeast Europe / Caucasus – Sub Sahara Africa – South Asia – Southeast Asia
Australasia – Northeast Asia – Central Asia – Eurasia – Euro-Alpine

Establishment of Regional Fire Monitoring / Fire Management Resource Centers

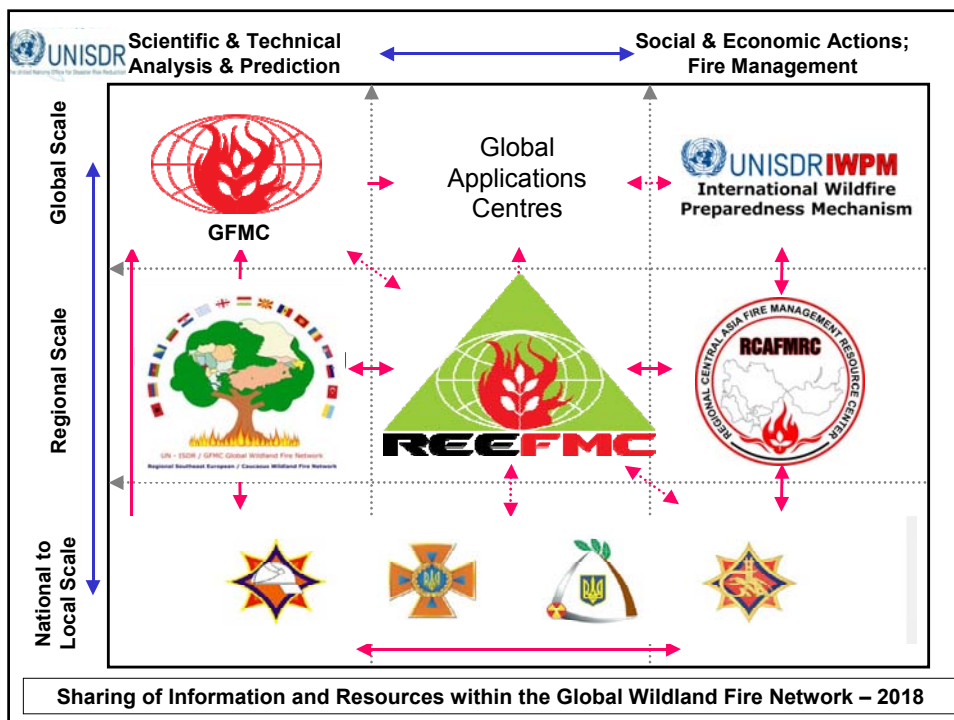
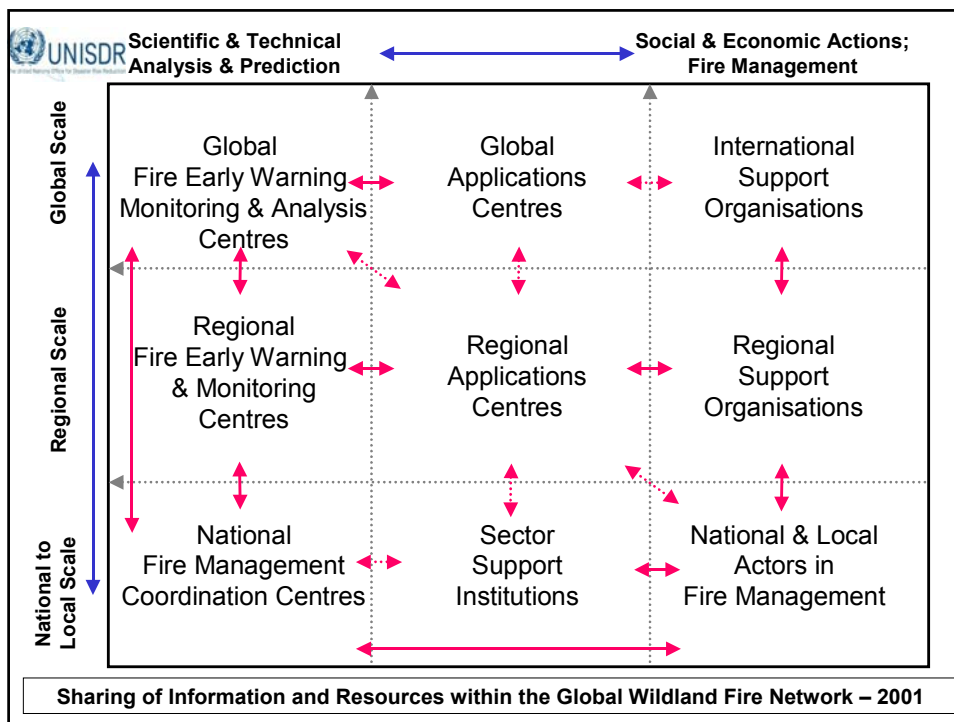
- 2010 -2013: Establishment of the first Regional Fire Monitoring Centers for Southeast Europe / Caucasus Region (Skopje, FYR Macedonia) and Eastern Europe (Kyiv, Ukraine)
- 2015: Establishment of the Regional Fire Management Resource Center in Central Asia (Ulaanbaatar, Mongolia)
- 2017: Establishment of Regional Fire Management Resource Centers in South East Asia (Bogor, Indonesia), Russia (Krasnoyarsk) and South America (Brazil and Chile)



Functions of “Regional Fire Monitoring Centers” (RFMC) / Regional Management Resource Centers” (RFMRC)

➤ Advisory support to nations and to the regional organizations:

- Development and implementation of fire management policies
- Support of participating countries of the region to develop informal or formal agreements / protocols for cross-boundary cooperation in fire management



Regional European Organizations and their Role with Regards to Landscape Fire Management

■ European Commission Support

- DG Research and Innovation: Research
- DG Environment: Fire Monitoring
- DG ECHO: Humanitarian Aid / Civil Protection Mechanism (emergency response)

■ Council of Europe – EUR-OPA Major Hazards Agreement – and Organization for Security and Cooperation in Europe (OSCE) & UNISDR:

Prevention, Preparedness and Policies / Planning

- National Fire Management Policies and Inter-Agency Coordination
- Cross-boundary Interoperability in Fire Management
- Capacity building at all levels



The Council of Europe: EUR-OPA Major Hazards Agreement

Members: 25 States including the Russian Federation

➤ Acting through 26 *Euro-Mediterranean Specialized Centers*

➤ GFMC responsible for fire management





The Organization for Security and Cooperation in Europe

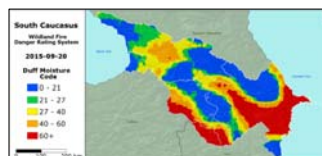
Ministerial Council Decision 2014/6:

➤ Tasked the OSCE executive structures within their available resources and mandates, to strengthen the exchange of knowledge and experience, building upon the OSCE's good practices in disaster risk reduction gained particularly in the field of **fire management**



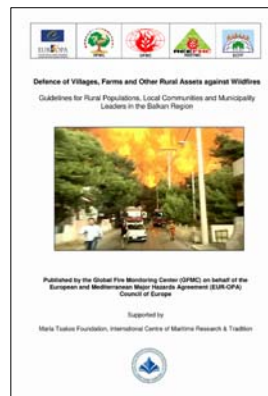
EUR-OPA & OSCE support to Participating States:

- National fire management assessments
- Facilitation of national inter-agency dialogue and coordination in fire management
- Initiation and facilitation of developing National Fire Management Policies
- National and regional training / capacity building
- Development of Regional Fire Early Warning Systems
- Facilitation of regional consultations on cross-boundary cooperation in fire management

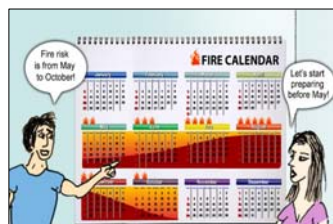


Outreach through Regional Fire Management Resource Centers in Europe: Development of Guidelines (2012-2013)

Defence of Villages, Farms and Other Rural Assets against Wildfires: Guidelines for Rural Populations, Local Communities and Municipality Leaders in the Balkan Region



Defence of Villages, Farms and Other Rural Assets against Wildfires: Guidelines for Rural Populations, Local Communities and Municipality Leaders in the Balkan Region



Preparation of local people to become aware of wildfire threats and to prepare their home for defense against wildfires



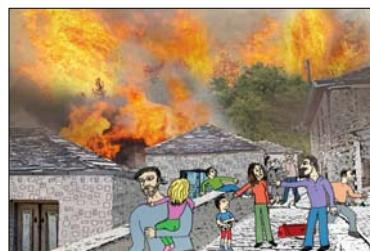
**Defence of Villages, Farms and Other Rural Assets
against Wildfires:** *Guidelines for Rural Populations, Local
Communities and Municipality Leaders in the Balkan
Region*



Preparation of local people
to become aware of wildfire
threats and to prepare their
home for defense against
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**Defence of Villages, Farms and Other Rural Assets
against Wildfires:** *Guidelines for Rural Populations, Local
Communities and Municipality Leaders in the Balkan
Region*



Example: Adaptation to
Mongolian Conditions

International competency standards for training of firefighters



June 2018:
Available in 17
Languages for the
use in 60+ countries

www.euro-fire.eu



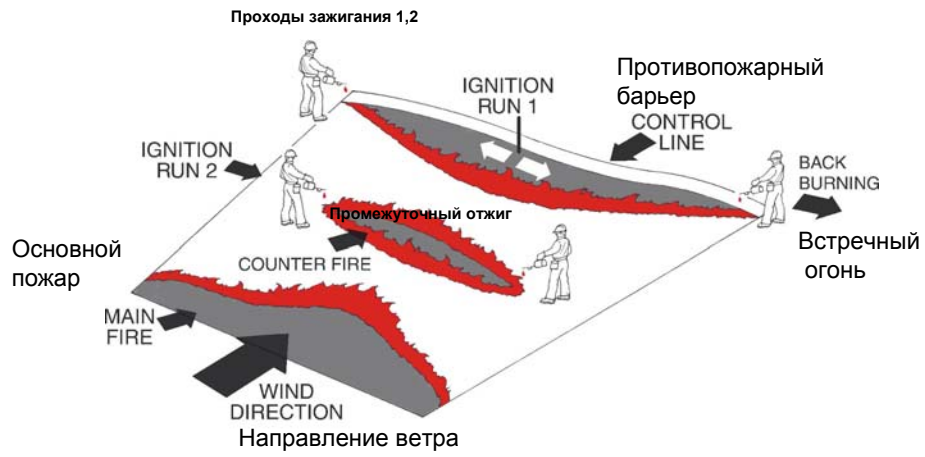
ТЕХНИКА И ТАКТИКА

Unit EF2: Techniques and Tactics



2.4.3 Indirect attack. Косвенная атака





6.3.2 Backfiring. Тыловой огонь





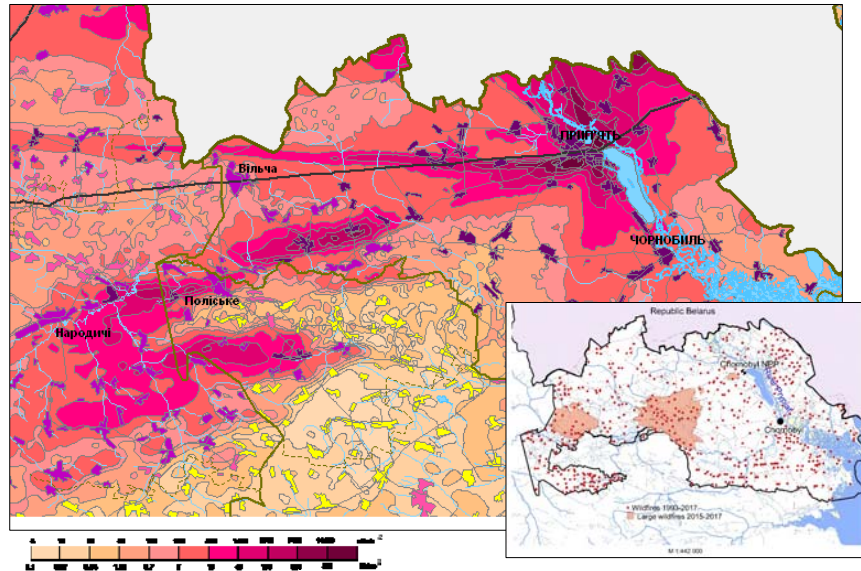
Prescribed
burning in pine
forests in
Eastern Europe



Prescribed
burning in pine
forests in
Eastern Europe



Chernobyl Exclusion Zone Contamination by $^{137}\text{Cesium}$

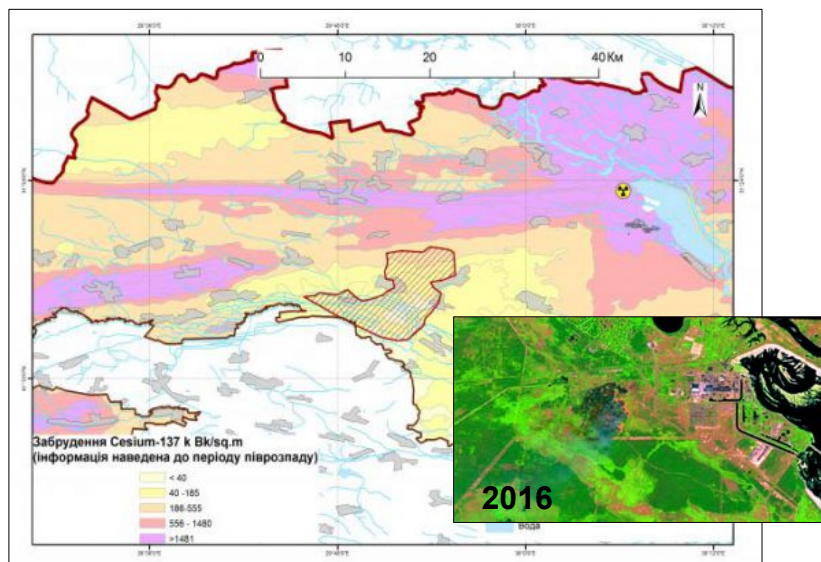


Consequences of the Chernobyl failure

The Chernobyl
firefighters
scrap yard



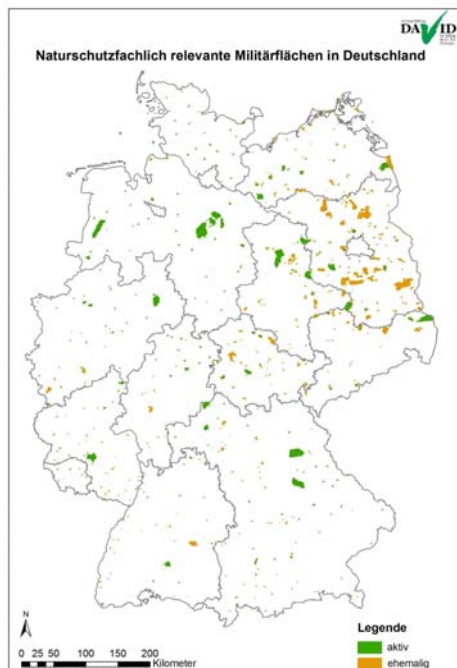
Contamination by ¹³⁷Cesium
Location of areas affected by wildfires on 28 April 2015



Recent Developments – Example from Eastern Europe –
Bilateral Ukraine-Belarus Exercise on Cross-Boundary
Cooperation in addressing Dangerous Radioactive Wildfires
Gomel, Belarus, 16-17 May 2018



Germany



Active and abandoned military training sites and shooting ranges

About 685,000 ha active and abandoned military training ranges are covering ca. 2% of the total land surface of Germany.

Many of these areas have a high conservation value.

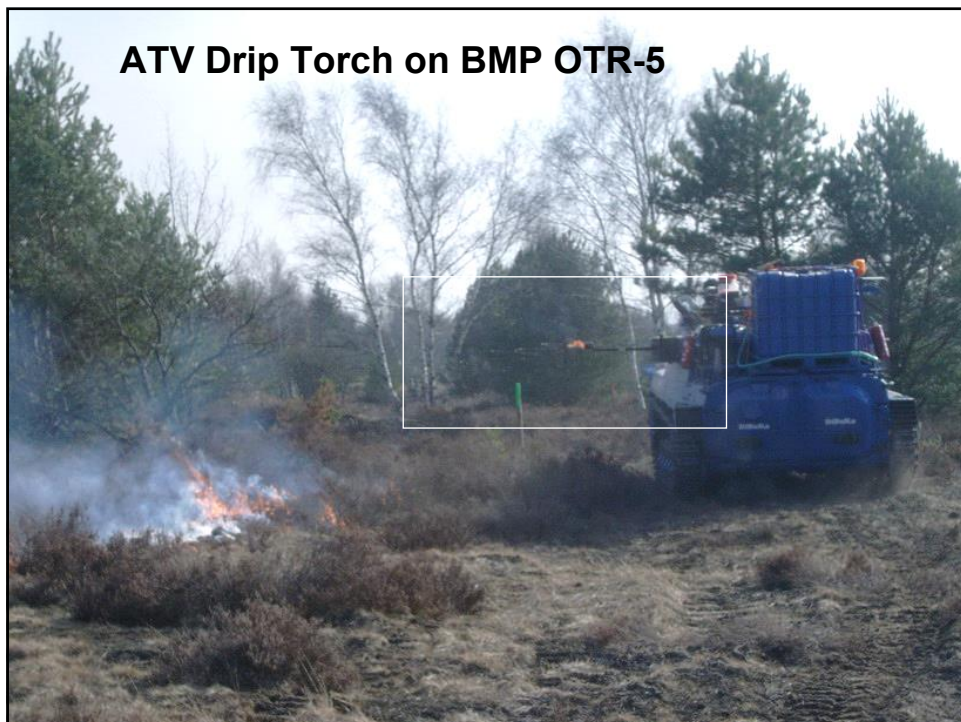
Thereof 316,000 ha are „FFH“ (Flora-Fauna-Habitat) sites certified by the European Union.

Ca. 200-250,000 ha are contaminated by unexploded ordnance (UXO)

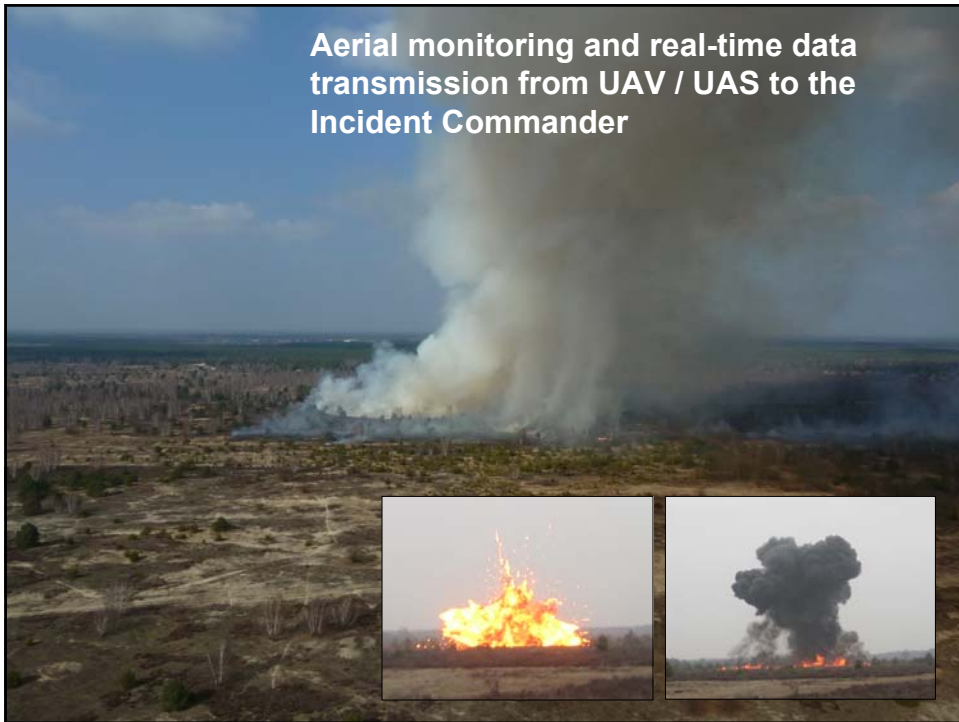
Source: Naturstiftung David







Aerial monitoring and real-time data transmission from UAV / UAS to the Incident Commander



Chile Wildfire Emergency - January / February 2017 -

- Rainfall deficit in Chile since 8 years
- Severe drought starting in 2016 – extending into 2017
- Multiple ignitions starting wildfires all over the country
- Natural vegetation and forest plantations affected



Chile Wildfire Emergency -January / February 2017 -

- **Extreme fire behaviour (rapid spread, very intense fires)**
- **Severe damages in settlements and infrastructures**



Chile Wildfire Emergency - January / February 2017 -

- **Forestry personnel (CONAF) and fire service volunteers performed very well – but were overwhelmed by the extremely large and intense fires**



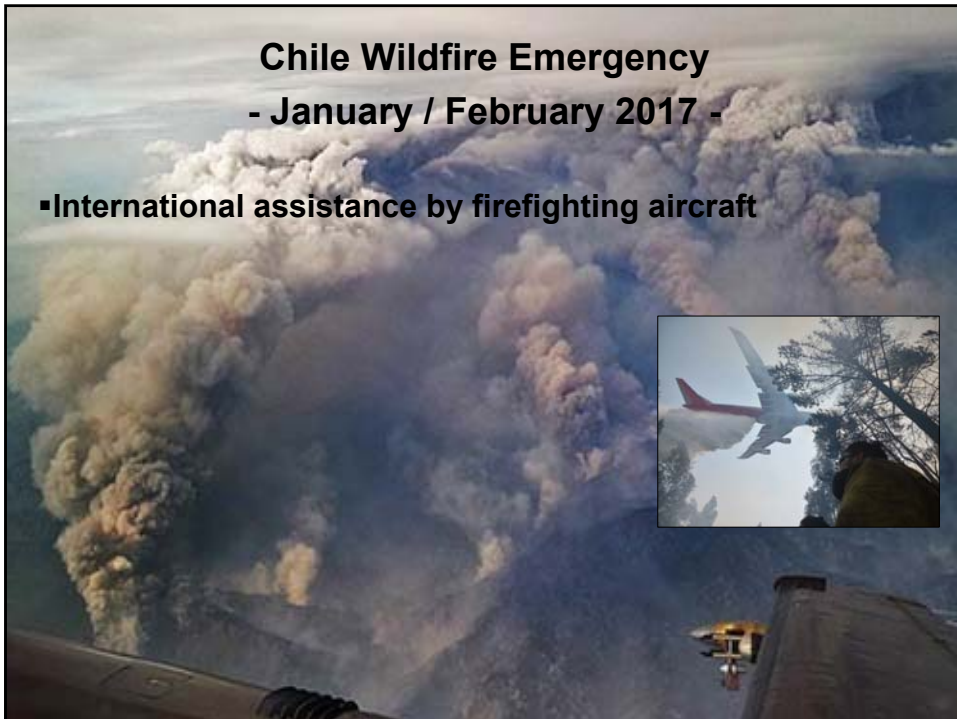
Chile Wildfire Emergency - January / February 2017 -

- International efforts and engagement to bring the wildfires under control



Chile Wildfire Emergency - January / February 2017 -

- International assistance by firefighting aircraft



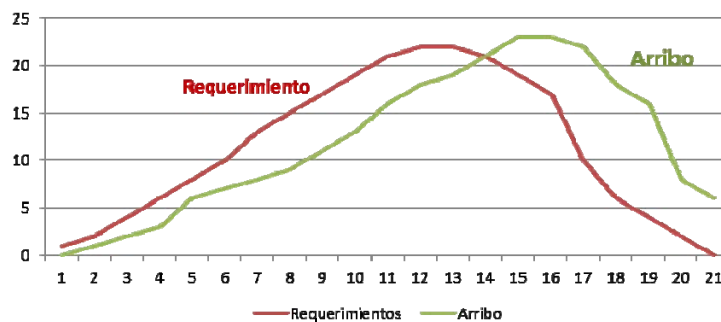
Some impressions transmitted by ILC Member Patricio Sanhueza (31 January 2017)



Briefing of incoming teams and an unprecedented view of the largest air tankers from the USA (B-747 SuperTanker) and Russia (Ilyushin IL-76)

Cumplimiento de las Reglas de la Cooperación Internacional

- Confusión con la llegada de algunos cooperantes voluntarios fuera de protocolo (**turismo emergencia**)
- **Llegada tardía del contingente principal**



Chile Forest Fire Emergency - January / February 2017 -

■ The way ahead

- Chile-Germany cooperation to assess the damages caused by the fires



Update



3-4 October 2017: Regional Consultation on Transboundary Cooperation in Fire Management accomplished

- Nine South American Countries attending with representation at high level



With support from



by decision of the
German Bundestag

Update



3-4 October 2017: Regional Consultation on Transboundary Cooperation in Fire Management accomplished

- Viña del Mar Declaration
- Official document that will be endorsed and followed up by all South American countries

Mr. Aaron Cavieres, Head of CONAF,
Announcing the Declaration



Update



3-4 October 2017: Regional Consultation on Transboundary Cooperation in Fire Management accomplished

- Signing of an agreement between CONAF and GFMC
- Initiation of the formal dialogue between government agencies in 12 South American countries
- Establishment of the Fire Management Resource Center – South America Region (FMRC-SAR)



Overall aim of GFMC's work at the Science-Policy-Practitioners Interface serving European / Global Partners

- Provision of advisory support to countries in developing National Fire Management Policies relying on
 - Holistic landscape-level approaches involving inter-agency cooperation
 - Community involvement in fire preventions, preparedness and self-defense
- Creation of international interoperability
- Development of a global cohesive fire management strategy



FIRE-IN

**Fire and
Rescue
Innovation
Network**

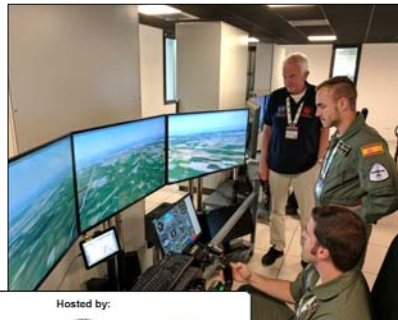
**Thematic Working
Group Landscape
Fire Crisis Mitigation
(TWG - C)**

Newsletter 1 – December 2017

FIRE-IN has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 749 575

20171015-18: Aerial Firefighting Conference Europe 2017, Nîmes – France

Presentation of the FIRE-IN project and co-sponsorship of the Interoperability Workshop



Linking aerial and ground resources in managing wildfire crises

- ▶ SAFE cluster presented the FIRE-IN project, and its potential for RDI and standardization on aerial fire fighting.
- ▶ TWG-C co-hosted the Interoperability Workshop, organized by the International Fire Aviation Working Group (IFAWG) and the Global Fire Monitoring Center (GFMC)
- ▶ The event aimed at connecting the world of aerial firefighters; helping shape the tactics and technologies of the AFF community, understanding the capability gaps and stakeholder priorities as well as creating interoperability. An international aerial firefighting simulation and live exercise involved aerial firefighting crews of four countries.
- ▶ For more information about the event:
<https://www.aerial-firefighting-europe.com/> and
<http://www.ifawg.org/>

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<http://www.fire.uni-freiburg.de> | E-mail: fire@fire.uni-freiburg.de

20171110: Briefing of the Prime Minister and the Cabinet of Ministers – Portugal

Presentation of FIRE-IN at consultative meeting convened by Prime Minister António Costa



Seeking innovative solutions for fire management in Portugal

- ▶ After the devastating fires season in Portugal in 2017 the government has set up the Task Force *Estrutura de Missão para a instalação do Sistema de Gestão Integrada de Fogos Rurais* and is seeking expert advice for the definition of holistic approaches in fire management.
- ▶ A group of national and international experts provided analysis, strategic visions and recommendations for action
- ▶ The GFMC, also in its function of coordinator of TWG-C "Landscape Fire Crisis Mitigation", presented the expertise in addressing the complexity of cross-sectoral responsibilities and challenges for management of fires in the intermix of natural, cultural and urban-industrial landscapes...
- ▶ More information on the meeting: **To follow**

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<http://www.fire.uni-freiburg.de> | E-mail: fire@fire.uni-freiburg.de

20171114-15: Exchange of Experience in Holistic Landscape Fire Management

Inputs by FIRE-IN partner GFMC to the International Conference *Protection of Human Settlements and Social Infrastructure from Wildfires*, Moscow, Russian Federation



Rural exodus and agricultural burning practices – main reasons for local and regional wildfire damages

- ▶ The conference, which was co-organized by EMERCOM of Russia and the United Nations International Strategy for Disaster Reduction (UNISDR) and supported by the EUR-OPA Major Hazards Agreement and FIRE-IN partner GFMC, included participation from European neighbors, including the leadership of Civil Protection of Italy.
- ▶ FIRE-IN partner GFMC explored the theme of *Holistic Approaches in Landscape Fire Management in Eurasia: Experiences and Prospects*
- ▶ The parties attending the workshop will convey the findings of the conference to the next European Forum for Disaster Risk Reduction (EFDRR) to be held in Italy in 2018.
- ▶ More information on the meeting: [To follow](http://www.fire.uni-freiburg.de)

71 <http://www.fire.uni-freiburg.de> | E-mail: fire@fire.uni-freiburg.de

Activities 2016



▪ Middle East – Islamic Republic of Iran (May 2016)

- Introduction of Iran to the Regional Wildland Fire Networks of SE Europe / Caucasus and Central Asia
- Introduction of the EuroFire Competency Standards in Parsi (Persian)



19th EΦA ROUNDTABLE

How to deal with Major Disasters – What should be the best European Response?

4-5 June 2018, Directorate General Security and Prevention, Belgium



Thanks for your Attention

 **UNISDR IWP**
International Wildfire
Preparedness Mechanism

 **ISDR**
United Nations
International Strategy for Disaster Reduction



EUROPA
ΕΥΡΩΠΑΪΚΟ ΚΕΝΤΡΟ ΑΣΦΑΛΕΙΑΣ ΚΑΙ ΠΡΟΦΥΛΑΞΗΣ
EUROPEAN CENTRE OF SECURITY AND PREVENTION

 **COUNCIL OF EUROPE**
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CONSIGLIO D'EUROPA

OSCE