PREFER NEWSLETTER ISSUE 3 October 2015

PREFER project achievements

The PREFER (Space-based Information Support for Prevention and REcovery of Forest Fires Emergency in the MediteRranean Area) Information products (see table below) computed for the 2015 fire season are available to stakeholders through the project Geoserver (prefer.cgspace.it) and by contacting CGS S.p.A. (ltampellini@cgspace.it). About 3000 products are presently available in the PREFER Geoserver..

TABLE I
LIST OF PRODUCTS DEVELOPED IN THE PREFER PROJECT.

Service: Information Support to Preparedness/Prevention Phase	Service: Information Support to Recovery/Reconstruction Phase
Annual Fuel Map	Post-fire Vegetation Recovery Map
Seasonal Fire Hazard Map	Burn Scar map HR Optical and SAR
Annual Vulnerability & Economical Value Map	Burn Scar Map VHR
Fire Risk Map	Damage Severity Map
Daily Fire Hazard Map	3D Fire Damage Assessment: Soil Erosion Susceptibility map and Biomass Volume loss map.
Fuel Reduction Map	
Prescribed Fires Map	

Fig. 1 - In gray the countries represented in the PREFER project while the project test areas are marked in red.

The products spatial resolution and updating frequency are described in Table II.

TABLE II - PREFER PRODUCTS CHARACTERISTICS

Product name	Spatial resolution [m]	Updating frequency
Fuel Map	5 - 15	Once a year
Seasonal Fire Hazard Map	250	Bi-weekly
Daily Fire Hazard Index	250	Daily
Vulnerability map	100	Once a year
Fire Risk Map	100	Once a year
Fuel Reduction map	5 - 20	Once a year
Prescribed Fire map	5 - 20	Daily
Post-fire Recovery map	30 - 50	Twice a year
Burned scar areas	1 - 30	Three/four times year
Damage Severity map	30	Three/four times year
Soil Erosion Susceptibility	1 - 20	Twice a year
Biomass volume loss	1 - 20	On demand

The PREFER products validation, performed during the first semester of 2015, has been carried out by using data provided by local institutions, external reference maps and field measurements. This newsletter aims at illustrate some results of the validation procedure.

PREFER PARTNERS

- DIAEE (Dipartimento di Ingegneria Astronautica, Elettrica e Energetica - Università di Roma 'La Sapienza')
- OHB- CGS (Compagnia Generale per lo Spazio)
- IES (Intelligence for Environment & Security) Consulting
- GMV (Aerospace and Defence SA)
- KEMEA (Center for Security Studies)
- SATWAYS
- SERTIT (University of Strasbourg)
- UCO (University of Coimbra)

Fig. 2 shows the 5 m spatial resolution fuel map computed for the Los Alcornocales area in Andalusia, Spain.

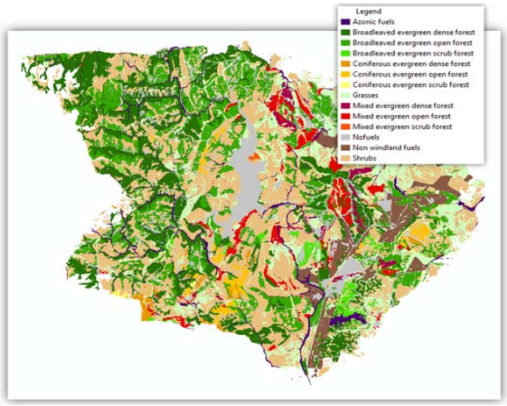

Fig. 2. Example of fuel map computed for 'Los Alcornocales', Andalusia.

Table III provides the results of the comparison between the fuel map computed in PREFER and those provided by external sources (JRC, aerial orto-photo, CFVA, Ministry of Environment) on three of the five (5) AOI of the project.

TABLE III - FUEL MAP VALIDATION RESULTS

Validation Item	IT	PT	ES
Shrub vs grass	90,94%	84,66%	93,94%
Evergreen vs Deciduous	Ongoing	71,86%	Not Appl.
Tree density (ES AOI)	Not Appl.	Not Appl.	76,94%
Fuel Parameters	70,11%	45,82%	80,85%

Note: In Portugal Agroforestry classes from COS2007 do not coincide with the assignation of the same classes in the JRC's Forest Type Map leading to a inconsistence in the assignment of the fuel parameters.

Contacts

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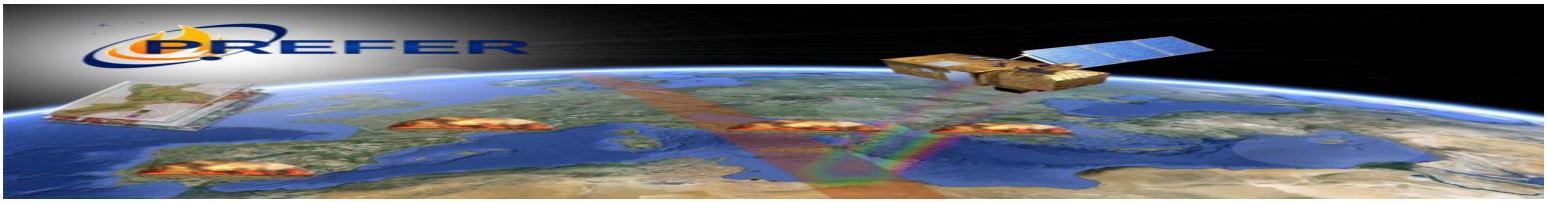

Fig. 3, shows the vulnerability map computed for the Italian AOI in Sardinia. The vulnerability maps have been computed taking in mind two main requirements: using an holistic approach based on international standards; using a easy to understand assessment process.

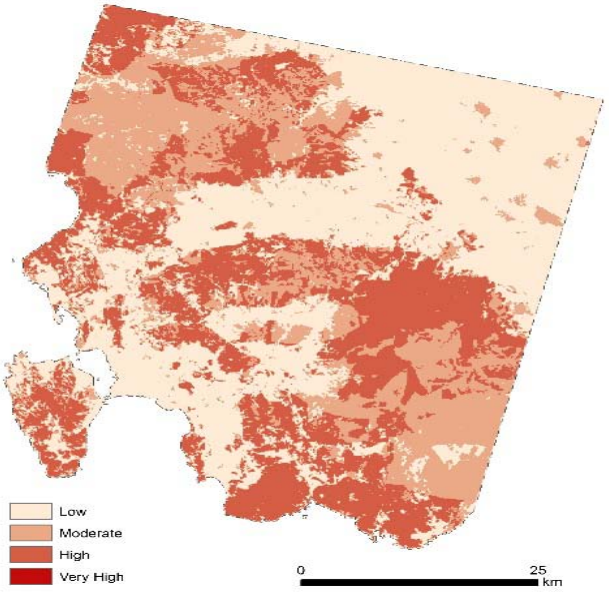

Fig. 3. Example of the Vulnerability map computed for Italian AOI area in Sardinia.

In most vulnerability classes the agreement with field measurements and external data sources exceeds 80%. However, the lower performance of the vulnerability model in estimating the higher values of vulnerability suggests the need for an improvement of the dataset.

Fig. 4 shows a simulation carried out by using the FARSITE fire simulator software to demonstrate the potential of the Fire Reduction Maps (the ignition point has been provided by CFVA).

Fig. 4. The orange and red bands indicate the buffer zones for the application of the fuel load reduction. The coloured lines (red, violet, green, cyan) indicate the fire propagation for each simulation, the time step is 30'.

In fact, Fig. 4, considering a fire occurred in Sardinia in 2014 which burned 485 ha, shows as the extent of the burned area could be dramatically reduced (see Table IV) by removing the fuel in those areas where the fuel reduction map provides a high level of priority.

TABLE IV - EFFECT OF FUEL REMOVAL BASED ON THE FUEL REDUCTION MAP

Land Cover	Actual burned area	Full reduction of the fuel
Garigue	165	0
Maquis shrubland	143	0
Agricultural land	114	13
Transitional woodland-shrub	20	0
Agro-forestry areas	20	0
Non-irrigated arable land	9	0
Natural grasslands	9	0
Vineyards	5	0
Total	**485**	**13**

PREFER dissemination activity

PREFER activity and results have been presented at the: SAFERHODES 2014, VII ICFFR (Coimbra), IGARSS 2015 (Milan), EGU 2015 (Vienna), Civil Protection Forum (Brussels), II ICFBR (Alghero), European Space Expo Event (Milan), 6th IWFC (Pyeongchang, Korea), 10th EARSel FFSIG (Cyprus).

PREFER Final Event

The PREFER final event will take place in January 2015.

PREFER USERS

- ANPC (Portugal National Authority for Civil Protection)
- CFVA (Corpo Forestale e di Vigilanza Ambientale), Sardinia region, Italy
- Centro Nazionale di Meteorologia e Climatologia Aeronautica, Italy
- Environment and Water Agency of Andalusia Regional Government, Spain
- Office National des Foréts
- SDIS de la Haute Corse
- Prefecture of Peloponnesus, Greece
- Greek Forest Service, Greek Fire Brigades, Greece
- SEPNA (Service for Environment and Nature Protection of the National Republican Guard), Portugal
- ICNF (Institute for Nature Conservation and Forests), Portugal
- General Secretariat for Civil Protection of Greece
- Regional Civil Protection of Sardinia Region

PREFER summary

PREFER is one of the Copernicus FP7 Emergency projects funded in 2012. It is devoted to forest pre- and post-fire management. The overall goal of the project is to develop and demonstrate a pre-operational portfolio of products, based on Earth Observation data for helping fires management at Mediterranean scale.