REGIONAL CIVIL PROTECTION OF FRIULI VENEZIA GIULIA

Civil protection in Friuli Venezia Giulia

Friuli Venezia Giulia Region

Austria

SLOVENIA

Veneto Region

Adriatic Sea

Udine

Pordenone

Piran

Gorizia

Trieste
Organization of the Civil protection of Friuli Venezia Giulia

Civil protection of FVG – National Department of Civil Protection

Regiona Law No. 64/86

- PRESIDENT OF FVG REGION
- COUNCILLOR FOR CIVIL PROTECTION
- CIVIL PROTECTION OF FVG REGION

- Area of General and Administrative Affairs
- Technical and Scientific Area for the Forecasting, Predictions, Alerting and Coordination of Rescue
- Regional Operative Room

L.267/98

- Protocol May 2002
- CCS Palmanova

Law 225/92

- Functional Centres

Law 225/92
Civil protection system of Friuli Venezia Giulia

Municipality civil protection Groups

- The Major is the first Civil protection authority at local level, in FVG in every municipality he has at disposal an organised group of civil protection volunteers (men and women), trained and equipped with municipal and regional funds.

- The Major and all the volunteers know better than anybody else their own territory, and for this reason they are the main part within the Integrated Regional System of Civil Protection.

- Each Municipal Civil Protection Group has an Headquarter: a centre hub for every Civil Protection activity, both in the ordinary days and in the emergency periods.
Organisation widespread on the regional territory

- 218 Municipalities
- 218 Civil protection Municipalities Groups
- 23 Districts
- Civil protection Regional Operative Center in Palmanova: SOR/SOUP/CCS

Volunteers

- Friuli Venezia Giulia Civil Protection Volunteers in the Municipality Groups:
  - 218 technical and logistical teams
  - 119 fire-fighting teams
  - 1 water rescue team
    - More than 8,000 volunteers
  - Equipments
    - More than 650 operative vehicles

- Civil Protection Associations:
  - 80 associations
  - More than 3,600 volunteers
Volunteers

Integrated Regional System of Civil Protection of Friuli Venezia Giulia

State forces
- Armed Forces
- Firefighters
- Police Forces
- National Forest Corp

Regional forces
- Prefecture UTG
- Civil Protection of the Region
- Local bodies
- Volunteers
- Health Institutions
Our activities - Natural / Anthropic Risks

Hydro Geological Risks
- landslides
- floods
- debris-flow
- high-water

Fires
Earthquakes
Industrial accidents

Flood events in FVG from 1991 to 2009

Municipalities damaged
24-26 November 2002 – Flood in Pordenone plain

- Pordenone
- Prata di Pordenone – bc. Prata di sopra
- Pasiano di Pordenone – bc. Traffe
- Prata di Pordenone – bc. Prata di sopra

596 mm / 72 hours

29 August 2003 – Flood in Val Canale - Canal del Ferro

- Pontebba – Pietratagliata
- Confluence F.Fella – Rio Geloviz

293 mm / 4 hours
9 September 2005 - Downpour in lower Pordenone plain

Fiume Veneto - Azzano Decimo

Ford of Vivaro to wade F.Meduna

173 mm / 6 hours

18 November 2006 - Downpour in Malina basin

Attimis - Faedis - Povoletto

T.Malina

216 mm / 10 hours
Grado: Acqua alta 1 dicembre 2008

Livello minimo porto 1.80m

Livello massimo raggiunto 2.07m

4 ore

November 2008 - Floodings

Flood plains
Eccezionali avversità atmosferiche
9 e 10 MARZO 2010
Tromba d’aria
pianura friulana  23 LUGLIO 2010

Evento alluvionale
area isontina e provincia di Trieste
18 SETTEMBRE 2010
17-18 settembre 2010 – Area isontina e provincia di Trieste
Piena del F. Isonzo e del F.Vipacco
221 mm in 24 ore su monti
35 mm in 1 ora su Carso

31 ottobre - 2 novembre 2010 – Alluvione pianura pordenonese
Piene nel bacino del F. Livenza - Sacile - Pordenone
811 mm in 72 ore
150 mm in 6 ore

Allagamenti a Pordenone
Ponte di Adamo ed Eva a Pordenone
Fiume Madistara Villanova di Prata di PN
Allagamenti a Sacile
31 ottobre - 2 novembre 2010 - Alluvione pianura pordenonese
Pieno nel bacino del F. Livenza - Sacile - Pordenone

Parcheggio Marcolin a Pordenone

Alluvioni a Pordenone

Fiume Noncello a Vallenoncello (PN)

Piene nel bacino del F. Livenza - Sacile - Pordenone

811 mm in 72 ore
150 mm in 6 ore

Largest historical earthquakes

1511 – M=6.9
Tolmino

1348 – M=6.4
Tra Villacco e Tolmezzo

1976 – M=6.4
Gemona del Friuli

1201 – M=6.1
Lungau

1895 – M=6.1
Ljubljana

1976 – M=6.1
Gemona del Friuli

1794 – M=6.0
Tramonti

1998 – M=5.7
Bovec

1885 – M=5.1

Seismic risk

Largest historical earthquakes
**Seismic risk**

06/05/1976 Ms 6.5 - 989 deaths – largest recent event

**Wildland fire risk**

- High danger period: 1 November - 30 April
- Map of wildland fire danger

1998 - 2009
Total burned area 6,348 ha
Number of fires 1,523
Anthropic risk

• 1986 – Radioactive contamination (Chernobyl)

• 1987 – Groundwater pollution in drinking water supply area
Emergencies outside the region

2000 Flood - Piemonte e Val d'Aosta
2002 Molise earthquake

2004 Tsunami: Sry Lanka  19 gennaio – 11 febbraio 2005
Pakistan earthquake: 9 - 21 ottobre 2005

2009 Abruzzo earthquake

Ortophoto
2009 Abruzzo earthquake

Project and construction of Friuli Village
Support to “Progetto C.A.S.E.” of DPC
Villaggio Friuli Venezia Giulia: consegna delle nuove abitazioni ai nuclei familiari di Fossa di 3-4 persone le cui case sono andate distrutte o gravemente danneggiate dal terremoto.

Le case sono state realizzate con i fondi messi a disposizione della Regione Friuli Venezia Giulia e con le donazioni pervenute alla Protezione Civile della Regione.

**Main objective of civil protection**

**PREPARE** and **COORDINATE** all knowledge, legal and management measures and actions needed in order to **GUARANTEE SAFETY** of people, goods and environment respect to every situation that may cause damage or danger.

- Forecast to provide
  - Study of natural risks and catastrophic phenomena
  - Define risk scenarios

- Know to take decisions
  - Dynamic knowledge
    - in space
    - in time
The Four main activities of civil protection

1. **Forecast**
   - **Primary level**: actions addressed to lower under a threshold considered “acceptable”, the risk of happening of catastrophic situations or events (studies, construction of defence facilities, emergency planning, training and improvement of civil protection system, ...)

2. **Prevention**
   - **Secondary level**: actions for intervention at the first evidence of risk situations or catastrophic events, with the scope of limit the impact and dangerous effects (activities of surveillance and control on the territory, quick intervention works, evacuation and rescue, ...)

3. **Emergency intervention**
   - **Tertiary level**: actions for activating all measures needed to restore "normal" conditions of safe living (interventions to put in safety conditions the affected territory, restoration of viability and public services, rehabilitation and/or preparation of structures and facilities for public and private use and for productive activities, ...)
Main tools for risk management and realisation of prevention actions

- Regional Operative Room (SOR) in Palmanova
- Monitoring systems for real-time control of the territory
- Flood monitoring and emergency planning
- Prevention, fast intervention and restoration works
- Preparedness: for civil protection personnel, volunteers and population

Regional Operative Room in Palmanova (SOR)
Civil Protection Operative Centre

the Regional Operative Room

- h24 control room
- Monitoring networks and logistic
- Coordinates the operations of civil protection
- Connected with DPC

Sala Operativa Regionale (Regional Operative Room)
Sala Operativa Unica Permanente (Unique Standing Operative Room)
Centro Coordinamento Soccorsi (Centre for the Coordination of Rescue)

At the Operative Room of the Regional Civil Protection in Palmanova gather the Civil Protection Regional Radio Networks and the Volunteering one, and the related localizing system.

Besides, the operators have got at their disposal:
- Data from the hydro/meteo/pluvio sensors
- Seismic data
- Video monitoring
- Landslide sensors data
- Meteosat
- Civil Protection GIS
- Fax / SMS alerting systems
- Civil Protection Portal
- Analogic and digital TV
SOR / SOUP / CCS

- Emergency Management Room:
  - 10 42” display
  - Digital videoprojector
  - Analogic phones, digital and VoIP ones, videotelephones
  - Laptop computers
  - Terminals of the Civil Protection Regional Radio Networks and the Volunteering one

- All the necessary informations are supplied by the Regional Operative Room

Different emergency levels $\Rightarrow$ Different ways of intervention

According to national Law L.225/92
Connectivity and data transmission

Civil Protection of the regions Friuli Venezia Giulia, Veneto, Trentino and National Civil Protection of Rome

Connectivity and data transmission - cross border cooperations

Civil Protection of Friuli Venezia Giulia, Carinthia (Austria) and Slovenia
Multimedia communications and connections

- ISDN & WIMAX links between all Municipalities Civil Protection centres and SOR for:
  - Video-conferences
  - Data exchange; field surveying and monitoring of possible dangers
  - Operative upgrades
  - Operators’ training
Real-time physical control of the regional territory

The data from all of the Civil Protection Monitoring Networks are collected in the Operative Centre in Palmanova:

- Hydro-Meteo-Marine monitoring network
- Hydro Geological monitoring network
- Meteorological Radars for nowcasting
- Satellite observations (Meteosat MSG)
- Seismic Monitoring Network

Our activities / Monitoring systems

Hydro-Meteo-Marine monitoring network

For real-time monitoring of ground effects of meteorological events, an automatic monitoring network is managed by regional civil protection composed by:

- 191 monitoring stations
- 111 hydrometers
- 112 rain gages
- 27 barometers
- 100 air thermometers
- 5 sea level sensors
- 18 snow level sensors
- 4 present weather sensors
6 marine buoys (3 meteo-oceanographic + 3 for waves monitoring)

Real time monitoring system based on fixed buoys on which different oceanographic and meteorological sensors are installed. The buoys are connected in real-time to the regional hydro meteorological network managed by the regional civil protection.

Data visualisation and analysis
Data modelling: hydrological and hydraulic modelling of hydrographical basins

Precipitation study and flood prediction

Meteorological radar

- Meteorological radar data are used for civil protection purposes in order to detect and monitor critical events and, during the phase of meteorological nowcasting, to update and/or modify meteorological alert messages.
- The new meteorological radar of DPC installed on Mount Zouf Plan is active from autumn 2008 and grants the maximum coverage of the mountain area of FVG and also of part of Carinzia region (Austria) and Slovenia.
Eumetsat – MSG Meteosat Second Generation (MET-8)

- Visible 0.6 μm
- Infrared 10.8 μm
- Infrared 3.9 μm
- Visible hi-def
- Vapor acqueo 6.2 μm

Hydro Geological Monitoring Network - e.g. Passo Pramollo landslide

- 4-parameters tiltmeters
- Extensimeters with cable on the surface
- Depth extensimeters
Hydro Geological Monitoring Network - e.g. Passo della Morte landslide

- Active landslide surface: 530,000 m²
- Active landslide volume: 2,830,000 m³
- Quiet landslide volume: 15,000,000 m³
- Deformation velocity: 5 cm/year

Geology of the area

Seismic monitoring network

Seismic activity

- Events recorded: 16,987
- Events of magnitude > 2.5: 2,257
- Events of magnitude > 4: 77

Evolution of seismic activity

1976 - 2008
Monitoraggio sismico in Friuli Venezia Giulia

Reti di monitoraggio sismico

- **OGS-CRS**
  - 15 stazioni a corto periodo
  - 8 stazioni a banda larga

- **DIGEO**
  - 21 stazioni accelerometriche

- **PCR**
  - 6 stazioni a banda larga

Altre reti presenti in regione:

- **SSN**
  - 12 stazioni accelerometriche

- **INGV**
  - 5 stazioni velocimetriche

Assetto attuale della Rete sismometrica e collegamenti con Protezione Civile
Seismic Alarm System
Information Flow

SEISMIC EVENT
Instrumental Detection
Automatic Alert System
Automatic Analysis of the Alarm Level
SMS to operators
Data to SOR
Fax to SOR

Seismic monitoring
cross-borders networks integration
Interreg IIIA Italy-Austria 2000-2006 ‘Seismic networks without frontiers in the southeastern Alps’

Seismic stations of Italy, Austria and Slovenia involved in the project

Interreg IIIA Italia-Austria 2000-2006
Seismological networks without frontiers in the southeastern Alps: real-time location EXAMPLE

23 aprile 2006 16:21:27 ML 3.3
Kanal (SLO)

broad-band data: real time; short-period and strong-motion data: near-real-time; automatic P-picking; manual S-picking
Video Monitoring Network - e.g. Passo Pramollo landslide

High-tech transmission system cameras

Steel-boxes to avoid air moisture

Cameras and laser-distancemeter connected in real-time to the operative center by means of radio-links, spread-spectrums and GPRS/GSM

Adavanced Monitoring

Land LaserScan

Infrared Thermocamera

Aerial LaserScan
Advanced Monitoring

Laser scan on helicopter

Advanced Monitoring

Land Laser scan
**Advanced Monitoring**

- Infrared thermocamera

  Used for:
  - Prevention and monitoring against wildfires
  - Search and rescue of lost people in the ground
  - Search and rescue in the sea

**Advanced Monitoring**

- Georadar
- Cesio Magnetometer
Flood monitoring and emergency planning

REGIONAL EMERGENCY PLAN
IDENTIFICATION OF RISKS ON LARGE SCALE

REGIONAL PLAN FOR HIGH-WATER SERVICE
Sharing of Databases to create a unique GIS FOR SOIL DEFENSE
REGIONAL EMERGENCY PLAN
IDENTIFICATION OF RISKS ON LARGE SCALE

SEISMIC RISK
HYDROGEOLOGICAL RISK
ANTHROPIC RISK

LETTURA

Piano Regionale delle Emergenze

Le Attività in corso

Realizzazione delle procedure operative per il rischio idrogeologico

Individuazione aree comunali di emergenza
I PIANI COMUNALI DI EMERGENZA NEL SISTEMA REGIONALE INTEGRATO DI PROTEZIONE CIVILE

Prevention, quick intervention and restoration works
Cut of vegetation inside the bed of the river

3 febbraio 2003

14 aprile 2003

Meduna river – Visinale di Sopra (Pasiano di Pordenone)

Maintenance of water courses

Cut of vegetation inside the bed of the river

3 febbraio 2003

14 aprile 2003

Meduna river – Visinale di Sopra (Pasiano di Pordenone)

Maintenance of water courses
Flood 2002 - Pordenone embankment’s break

Steel screen

Flood 2003 - Ugovizza

Gravel and material removal from the bed of the creek
Esempi di interventi di ripristino a seguito dell'alluvione avvenuta in Val Canale il 29 agosto 2003

Zona colpita nell’Frazione di Ugozzi - Comune di Malborghetto-Valbruna

Stessa zona dopo gli interventi di ripristino
Esempi di interventi di ripristino a seguito dell’alluvione avvenuta in Val Canale il 29 agosto 2003

Zona colpita sulla strada per Passo Pramollo

Stessa zona dopo gli interventi di ripristino

Zona colpita nella Frazione di Pietratagliata - Comune di Pontebba

Esempi di interventi di ripristino a seguito dell’alluvione avvenuta in Val Canale il 29 agosto 2003

Stessa zona dopo gli interventi di ripristino
Esempi di interventi di ripristino a seguito dell’alluvione avvenuta in Val Canale il 29 agosto 2003

Zona colpita nella Frazione di Pietratagliata - Comune di Pontebba

Stessa zona dopo gli interventi di ripristino

Landslide settlements - Lunze (Tolmezzo)
Works for maintenance of forest tracks on Karst area

- Exercise and works to improve techniques, apply equipments, make a good maintenance of territory

Cleaning of bed of Torre creek
Exercise: building a tent camp

Meetings and exercises at school with civil protection personnel, volunteers and students
Web Portal of Friuli Venezia Giulia Civil Protection

www.protezionecivile.fvg.it