



**Union Internationale des Sociétés
de Transport Combiné Rail-Route**

WEATHER EXTREMES
**Vulnerability of Combined Transport
and measures to reduce impacts**

Workshop of the FP7 Weather-project

14th September 2010

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**International Union of combined Road-Rail
transport companies (UIRR)**



UIRR: 18 operators in 14 countries



Combined Transport represents +25% tkm freight of major RUs

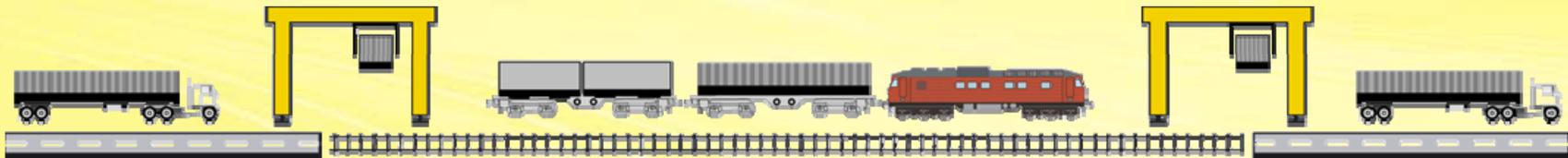


UIRR: Combined Transport

UIRR companies represent 50% of European CT:

- 12,000 truckloads per DAY shifted to rail in 500 trains
- 13,000 wagons under own management

UNACCOMPANIED CT with intermodal loading units



ROLLING MOTORWAY complete trucks + driver



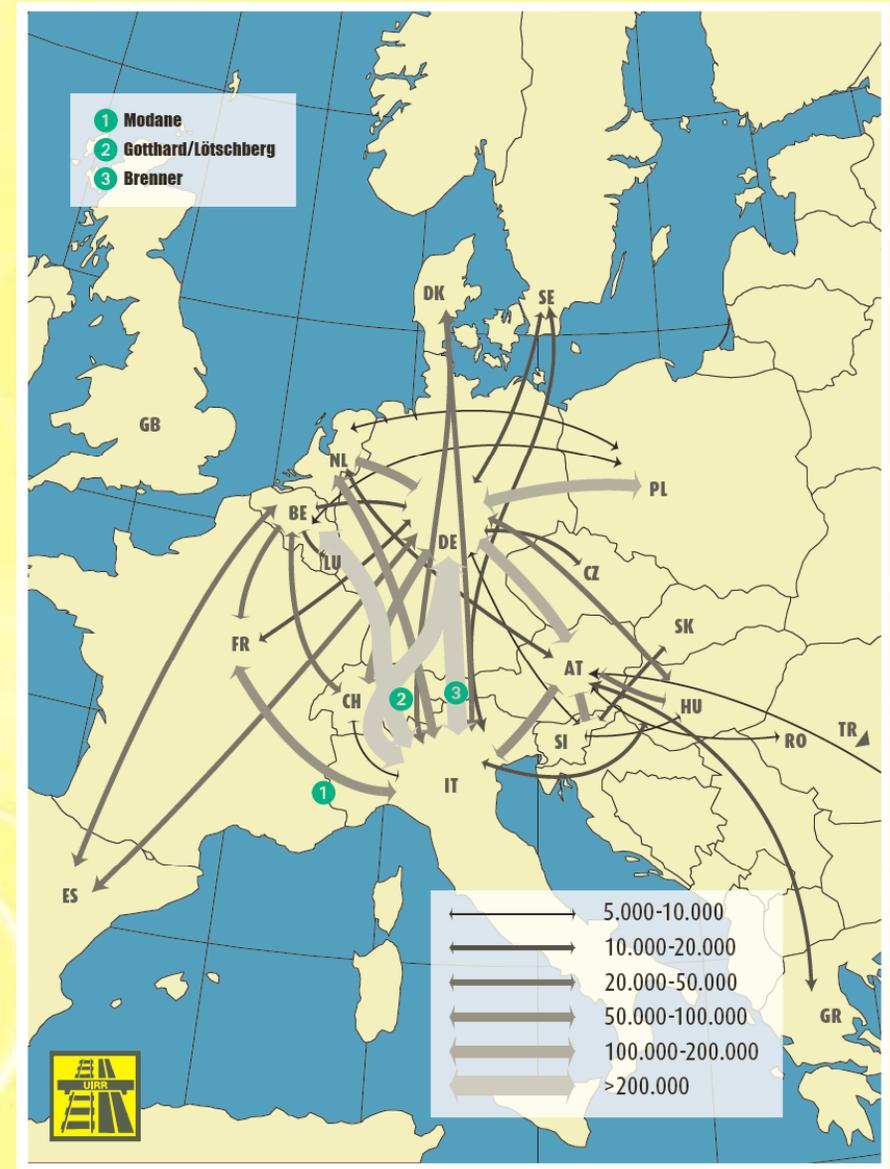


Combined Transport Traffic Flows

- Continental traffic mainly swap bodies and semi-trailers

- Port hinterland traffic mainly ISO container

Main international flow transalpine traffic
DE, BENELUX, UK
North Europe to and from **IT**





Weather Vulnerability for CT

Effects on

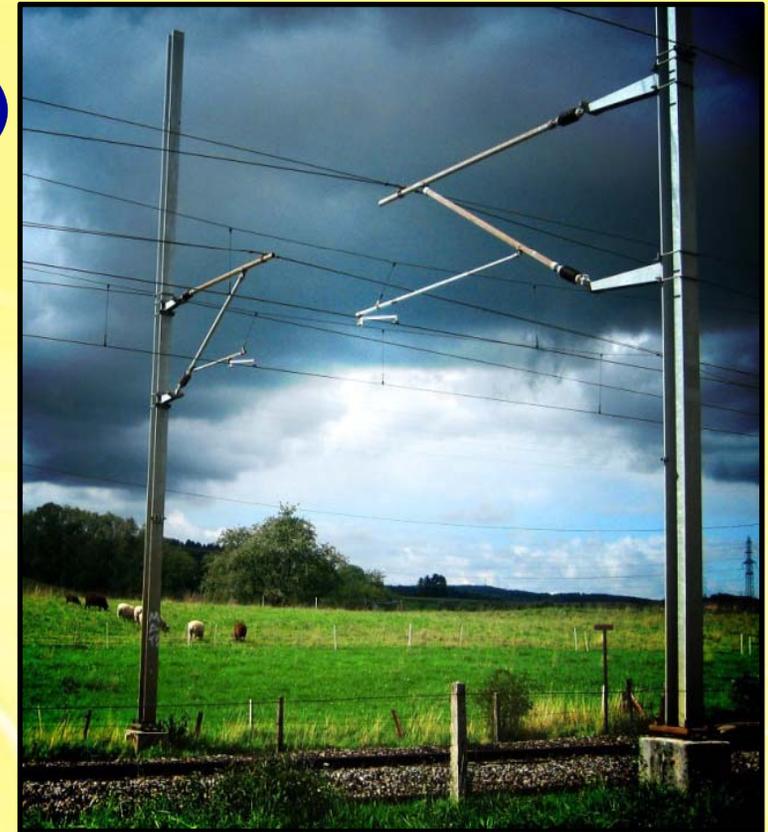
- Infrastructure (lines, overhead contact lines)
- Terminal operation (swinging loads)
- Rolling stock and loading units

Events

- Falling trees/branches
- Inundation of rail tracks & routes
- Storm: delay or stop of operation

Speciality of CT

- Access only to codified lines (restricting flexibility)





Example Transalpine Rail

Transalpine railways:

- Land slides, avalanches
- Storm
- Closure of tracks in winter



Line Bellinzona-Luino-Gallarante DE – CH – IT:

5 million net-tonnes yearly, most important CT line for transalpine traffic

2002 land slides: closure for several weeks



Land slide line Bellinzona-Luino-Gallarante 2002





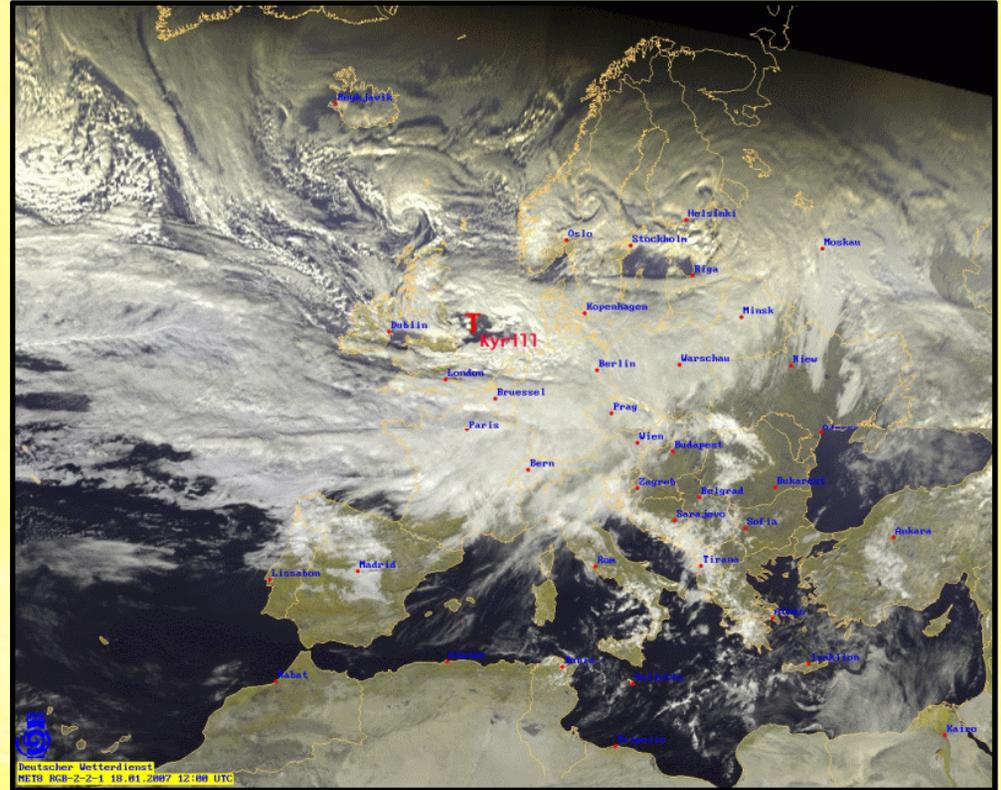
Example Storms

2007 Kyrill:

- More than 24h of interruption of rail transport in Germany
- First time in German history that whole network was closed down

2010 Xynthia:

- Storm
- Region Frankfurt
- No rail traffic for several hours





Reduction of extreme weather impacts

- **Investment into infrastructure**
- **Preventing maintenance (cut vegetation)**
- **Maintain trunk line alternatives (redundancy)**
- **Contingency plans**
- **Quick repair of damages**
- **Network risk analysis**
- **Central or decentralized (signalisation systems)**
- **Data on delays and costs caused by extreme weather or other disturbances (security)**



Reduction of vulnerability

Infrastructure: Reconstruction of the line Bellinzona-Luino-Gallarante with galleries and fixing slopes



Regular maintenance (cutting trees...)



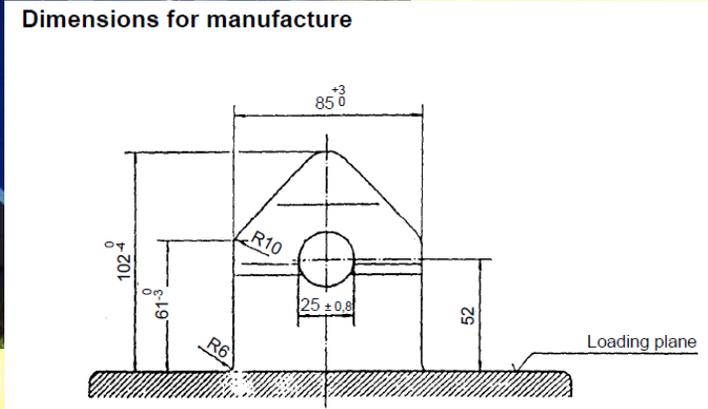
Wagon construction (CT): UIC leaflet 571-4

“The wagons shall incorporate ... devices ... to ensure the stability of empty large containers and swap bodies against the effect of side winds.”

**Parameter for wagon construction:
wind pressure of 200 N/m² (8 Beaufort, 1/12 scale)**



Wagon construction (CT): UIC leaflet 571-4



Spigots for ISO containers and swap bodies (with “windnoses”)



Combined Transport compared to pure road

Vulnerability (rail system advantages and disadv.)

- + Heavier (less vulnerability against heavy winds)
- + Tracks keep vehicles in lane (much safer in all weather conditions: storm, rain, ice...)
- + Safety systems reduce human failures
- Signalling system (additional vulnerability)
- Overhead contact line (additional vulnerability)

Recovery after disturbance

- Less flexibility (limited number of routes esp. CT)



Being prepared as competitive advantage

Title of DB promotion campaign started 1966.

Still known today but often quoted if rail has problems today.

Being prepared could (re-) turn into a competitive advantage again.

**Alle
reden vom
Wetter**



Wir nicht.

Fahr lieber mit der Bundesbahn





Thanks for your attention.

For further information

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