

EasyWay

Annual Forum 2010



Shortcut to the future.
Lisbon • November 16th-18th



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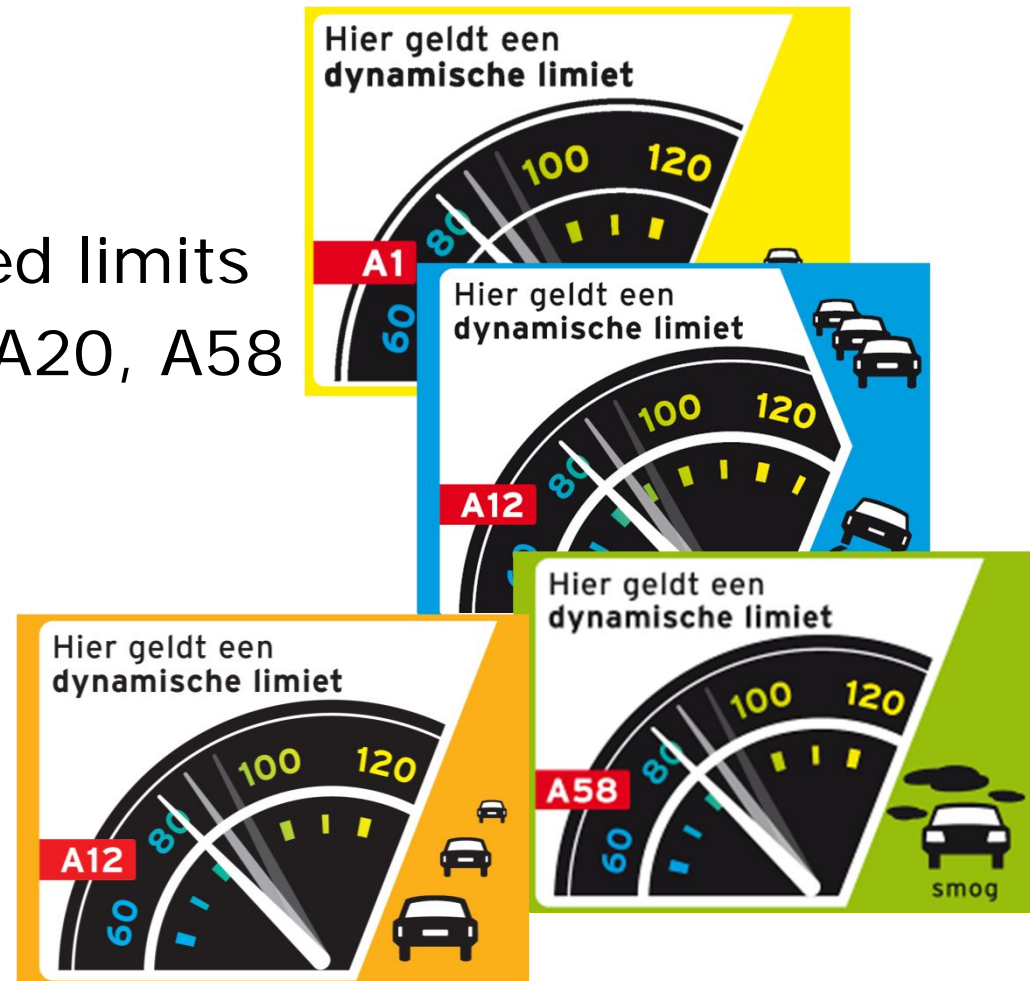
Dynamic speed limits - dynamax

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Agenda

- Scope dynamic speed limits
- FOT Tests A1, A12, A20, A58
- Elaboration tests
- First results





Scope dynamic speed limits



“Press message | 19-01-2009”

When the traffic situation allows this, the speed limit will be increased today on the A1 between Bussum en Muiderberg from 100 to 120 km/h.

Minister of Transport, Public Works and Water Management, Mr, Eurlings has started today the first experiment with dynamic speed limits. Experiments with different applications will be held on five sections of the motorway network.

- Objective of the Field Operational Tests (FOTs) is the gathering of insight regarding the effects (safety, traffic flow and environment) and of human behaviour in combination with dynamic speed limits.
- Also it is being studied what the consequences are for road operators and network management
- **Motto: Driving faster when possible, slowly if necessary**



The benefits of dynamic speed limits

- Adjustable to unexpected and changing situations like weather, traffic volumes, accidents and fitted to circumstances
- Possibility for road authorities to act immediately, without time demanding procedures or placing road signs
- Only when needed: no unnecessary delays for drivers
- More understandable by road user: better acceptance of speed limits





Tests dynamic speed limits



- A1 Bussum-Muiderberg
increasing of speed (100->120) at **moderate traffic conditions** (reduction of travel time)



- A12 Bodegraven-Woerden
Speed reduction (120->100, 80) at **rainy conditions** and (120->100, 80, 60) at **shock waves /homogenize**



- A58 Tilburg
Speed reduction (120->80) to **decrease air pollution** by reducing the amount of fine particles



- New: A12 Voorburg en A20 Rotterdam
speed adaptation (100, 80) to **improve throughput, traffic flow and air quality**



FOT test tracks Dynamamax



Two applications to be highlighted at this conference:

- A12 Bodegraven Woerden: 80/100 in rainy conditions
- A12 Voorburg 80/100 for clean air and throughput



FOT A12 Bodegraven Woerden



- Speed limit reduction (120->100, 80) **at rainy conditions** and (120->100, 80, 60) **at shock waves**
- Trigger: homogenize – shock wave, rain - shower radar
- Algorithms TU-Delft and TNO trigger desired maximum speed limit sign
- Visual warning: signs on variable message signs (VMS) above the road
- Motto/argumentation signs for support
- Enforcement: normal





Driving behaviour and risk during rain

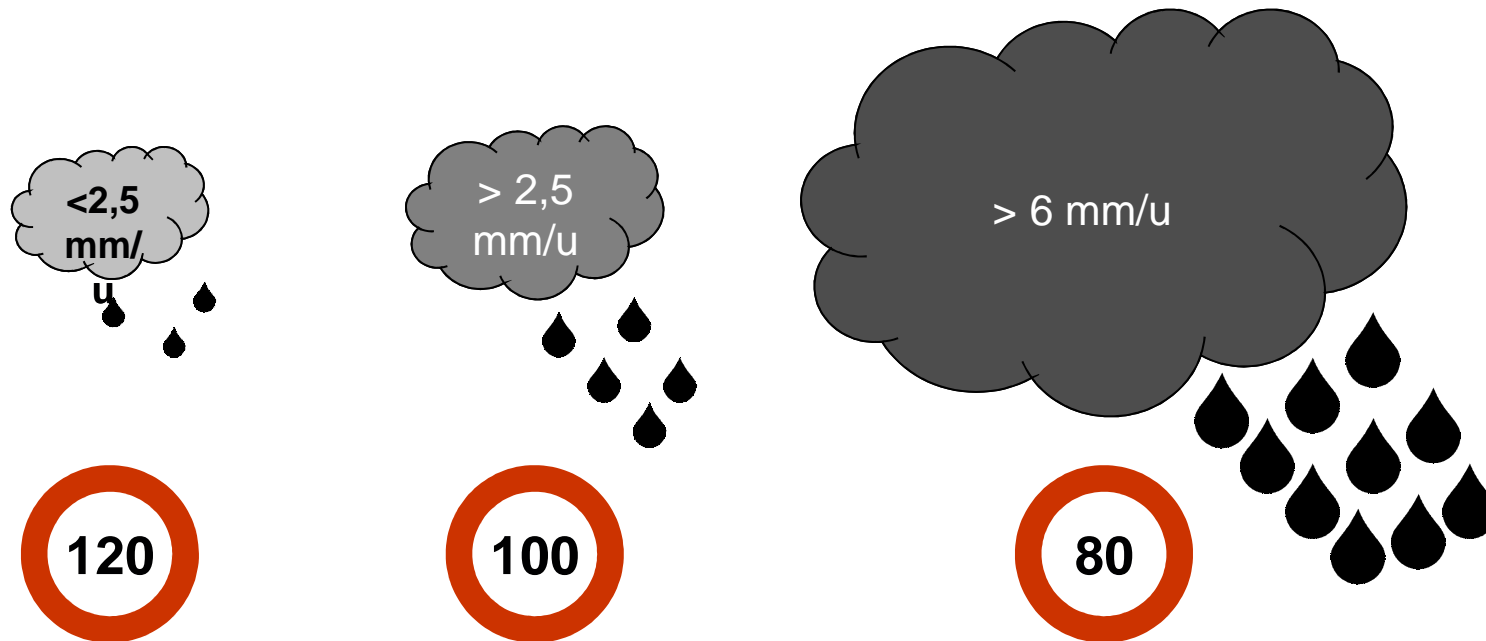
- In The Netherlands it rains **6%** of the time
- During that time: **15% of accidents**
- Wet road surface: **12%** of the time with **30%** of the accidents
- Drivers adapt their speeds to the higher risk but not enough:
 - Poor visibility
 - Slippery road
- It is demonstrated that variable speed can help to bring down the driving speed

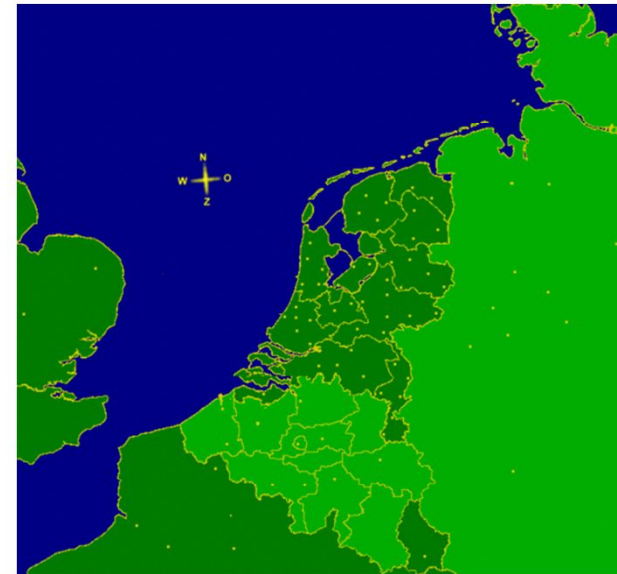




Criteria for rain dependent speed limit A12

Choice of speed limit depends on rain intensity:



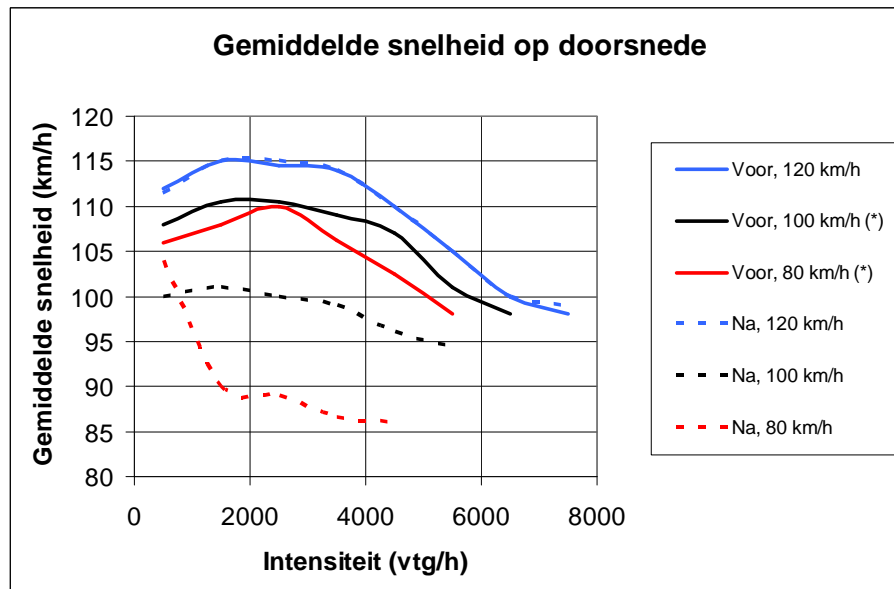


Rain algorithm A12





Evaluation A12 Bodegraven Woerden **rain application**



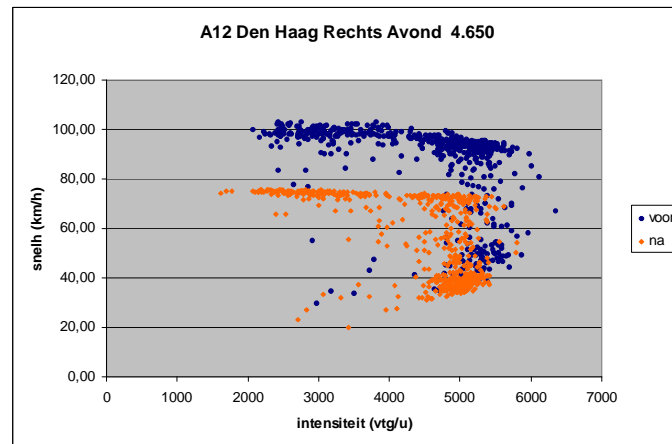
First evaluation results:

- Drivers react directly when the speed limit reduction of 100 and 80 is active.
- Drivers adapt their speed substantially and much more smoothly (without abrupt breaking) and also earlier (before it is starting to rain!!).



FOT A12 Voorburg

Immediate course: evaluation fixed 80 km zones



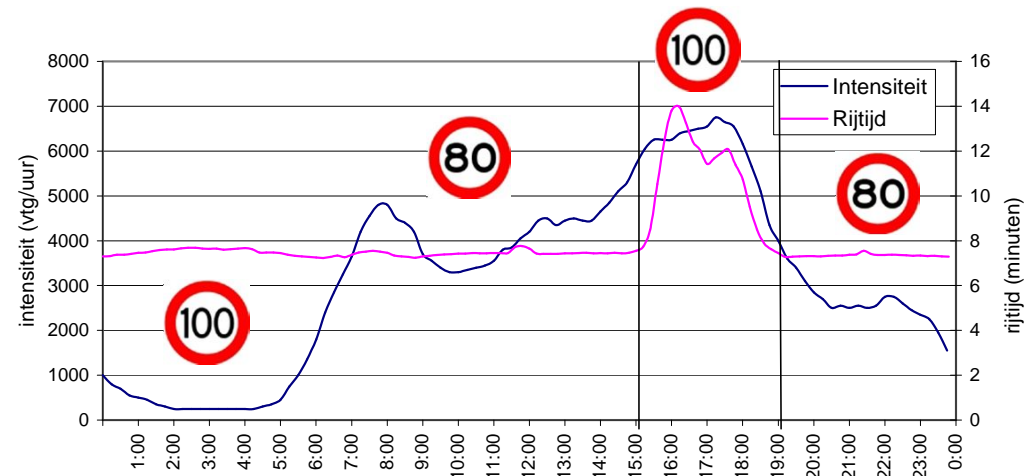
On a few zones with complex exchange of traffic, the permanent 80 km/h with section control gives a reduction of traffic capacity due to a change in driving behaviour!!!

- Drivers: experienced a higher work load, reduce speed and experience that changing lanes is more difficult.
- A speed limit of 80 combined with strict speed control will harm traffic efficiency on complex waiving sections.



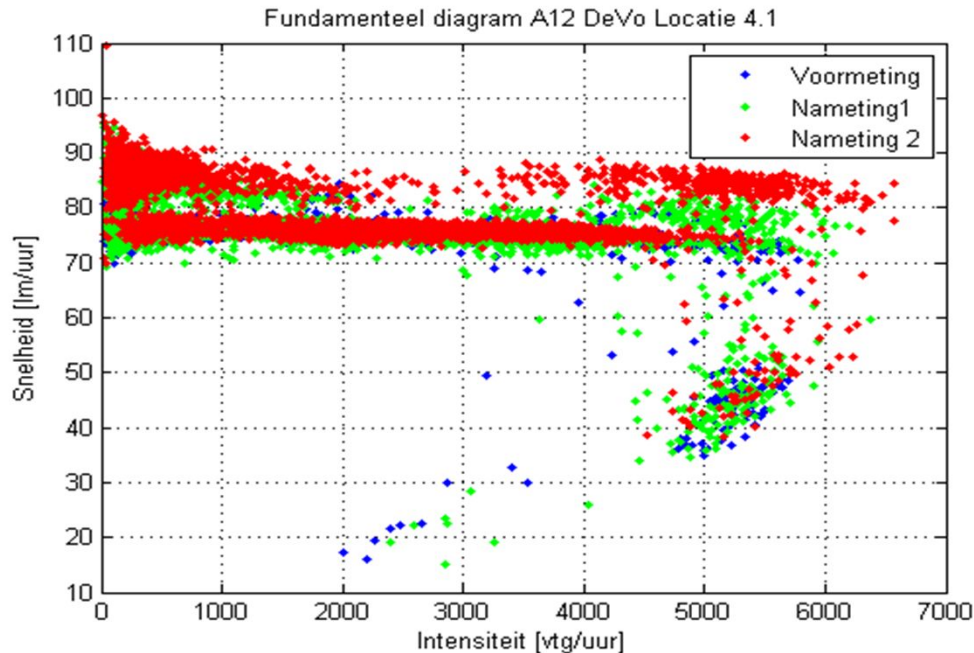
FOT A12 Voorburg

- Speed limit adaptation (100, 80) for throughput and local air quality
- Trigger: traffic volume, fixed night window
- Visual warning: signs on variable message signs (VMS) above the road
- Enforcement: video section control





Evaluation FOT A12 Voorburg



First evaluation results

Effect dynamic speed limit 80/100 around rush hours is positive. Drivers adapt their speed and behaviour

Capacity is back to level before the 80 km fixed speed limit was introduced!



Dynamax state of affairs

- Dynamax is a programme of field operational test for assessment of effects of dynamic speed limits for different applications on Dutch motorways A1, A12, A58 en A20
- 4 out of 5 tests completed, one experiment (A20 Rotterdam) still to go (2011)
- First evaluation results are encouraging: positive target effects with moderate side effects
- After completion and integration of evaluation results, the final evaluation report will be reported to the Ministry of Infrastructure and the Environment (end of 2010)
- The new government has plans to introduce an expansion of dynamic speed limits in combination with a general increase of the speed limit from 120 to 130 km/h

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Thank you for your attention

Questions ??????

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