

BUILDING CAPACITIES FOR ELABORATION
OF **NDPs** AND **NAs** OF THE EUROCODES IN
THE **BALKAN** REGION

4-5 November 2014, Skopje



PROGRESS OF ELABORATION OF NDPs AND NAs IN SERBIA

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ISS technical committees related to Eurocodes

ISS technical committee	Eurocode	Committee title
U250-1,8	EC0; EC1; EC8	Basis of structural design, Actions on structures, Design of structures for earthquake resistance
U250-2	EC2	Design of concrete structures
U250-3,4,9	EC3; EC4; EC9	Design of steel structures, Composite steel and concrete structures Aluminium structures
U250-5,6	EC5; EC6	Design of timber Design of masonry structures
U182	EC7	Geotechnical design



Institutions which participate in the work of Eurocode committees

Faculties:

- Faculty of Civil Engineering (University of Belgrade)
- Faculty of Technical Sciences – Department of Civil Engineering and Geodesy (University of Novi Sad)
- Faculty of Civil Engineering (University of Niš)
- Faculty of Mining and Geology (University of Belgrade)
- Faculty of Architecture (University of Belgrade)

Institutes:

- Seismological Survey Institute of Serbia (Belgrade)
- Institute for Testing of Materials – IMS (Belgrade)
- Hydro Meteorological Institute of Serbia (Belgrade)

Other stakeholders:

- Representatives of companies for design, consulting and performance of civil engineering structures



History of Eurocodes in Serbia

- Institute for Standardization of Serbia (ISS) and the Faculty of Civil Engineering - University of Belgrade (FCE-UB) translated 17 parts of Eurocodes. Thirteen of them have been adopted as Serbian standards - SRPS EN. Four of them are in the different phases of development.
- ISS published 37 parts of Eurocodes in English language.
- ISS adopted and published (in the Official Gazette) 53 parts of Eurocodes.
- ISS published 24 National Annexes, 5 are in the final phase (SRPS EN 1999/NA) and 4 National Annexes are in the phase of development.



National Annexes published before the workshop held in December 2013

Basis of structural design EC0

- SRPS EN 1990/NA:2012

Design of steel structures EC3

- SRPS EN 1993-1-1/NA:2013
- SRPS EN 1993-1-2/NA:2013
- SRPS EN 1993-1-3/NA:2013
- SRPS EN 1993-1-4/NA:2013
- SRPS EN 1993-1-5/NA:2013
- SRPS EN 1993-1-6/NA:2013
- SRPS EN 1993-1-7/NA:2013
- SRPS EN 1993-1-8/NA:2013
- SRPS EN 1993-1-9/NA:2013
- SRPS EN 1993-1-10/NA:2013

- SRPS EN 1993-1-11/NA:2013
- SRPS EN 1993-1-12/NA:2013
- SRPS EN 1993-2/NA:2013
- SRPS EN 1993-3-1/NA:2013
- SRPS EN 1993-3-2/NA:2013
- SRPS EN 1993-4-1/NA:2013
- SRPS EN 1993-4-2/NA:2013
- SRPS EN 1993-4-3/NA:2013
- SRPS EN 1993-5/NA:2013
- SRPS EN 1993-6/NA:2013

Design of composite steel and concrete structures EC4

- SRPS EN 1994-1-1/NA:2013
- SRPS EN 1994-1-2/NA:2013



NAs and NDPs adopted after the workshop held in December 2013 (1)

Design of concrete structures EC2

- SRPS EN 1992-1-2/NA
- SRPS EN 1992-2/NA
- SRPS EN 1992-3/NA

In general, the recommended values have been adopted and these Eurocodes will be published by the end of 2014.

It is estimated that the NA for SRPS EN 1992-1-1 will be adopted at the beginning of 2015, as well as the recommended values stipulated therein.



NAs and NDPs adopted after the workshop held in December 2013 (2)

Design of composite structures EC4

- SRPS EN 1994-1-3/NA

NDP for design criteria for rigid (block) shear connectors is added.
Other values are mainly adopted as recommended.

Design of aluminium structures EC 9

- All 5 NAs will be published this month.

The recommended values will mainly be adopted.



NAs and NDPs in progress (1)

Action to structures SC1

- NDPs for wind actions (SRPS EN 1991-1-4/NA) are adopted, map of wind actions received from Hydro Meteorological Institute of Serbia will be corrected.
- NDPs for snow load (SRPS EN1991-1-3/NA) are adopted. Maps received from Hydro Meteorological Institute of Serbia will be corrected.
- Other NDPs are in progress. Maps for thermal actions are also received from Hydro Meteorological Institute of Serbia and will be corrected.



NAs and NDPs in progress (2)

Design of concrete structures EC2

- SRPS EN 1992-1-1/NA: The national technical committee estimates that the recommended values will mainly be adopted.

Design of timber structures EC5

- NDPs for all 3 Eurocodes will be adopted by the end of 2014. The recommended values will be adopted.



NAs and NDPs in progress (3)

Design of masonry structures SC6

- The national technical committee estimates that the recommended values will mainly be adopted.

Geotechnical design SC7

- The national technical committee will engage more experts for work on NDPs.
- CEN members experience in defining NDPs is very important, especially the experience of Austria and Slovenia.



NAs and NDPs in progress (4)

Earthquake resistant design of structures SC8

- Maps are defined by the Seismological Survey Institute of Serbia
- NDPs shall be defined according to the ground characteristics and other parameters in Serbia.

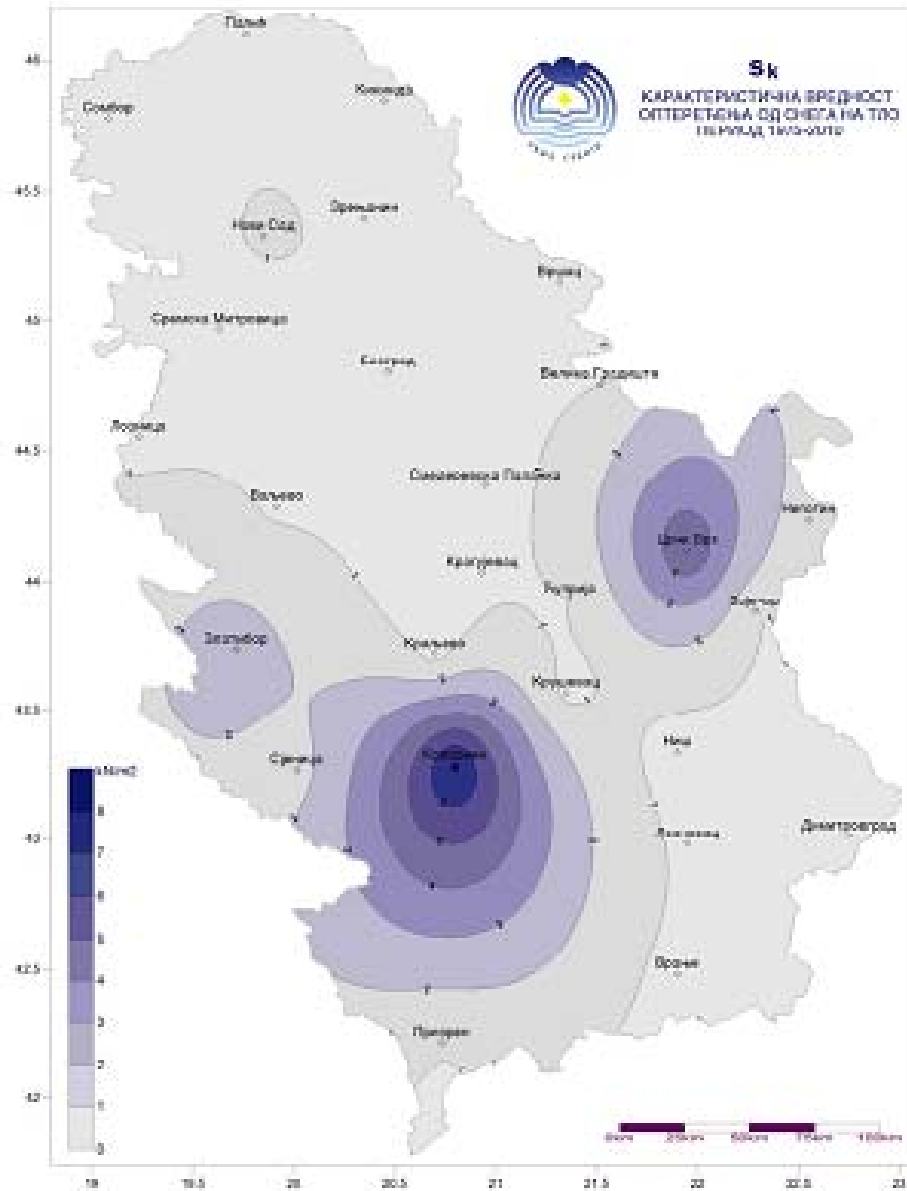


NAs and NDPs in progress (5)

Maps development and changes

- Zones should be defined within the cadastral boundaries on the maps
- Methodology needs to be corrected on the maps for SRPS EN 1991-1-4/NA (wind actions)
- The snow load at sea level in Serbia will be defined by one or two zones. The coefficients taking into account the altitude will be defined in a separate table (Eurocode SRPS EN 1991-1-4/NA)



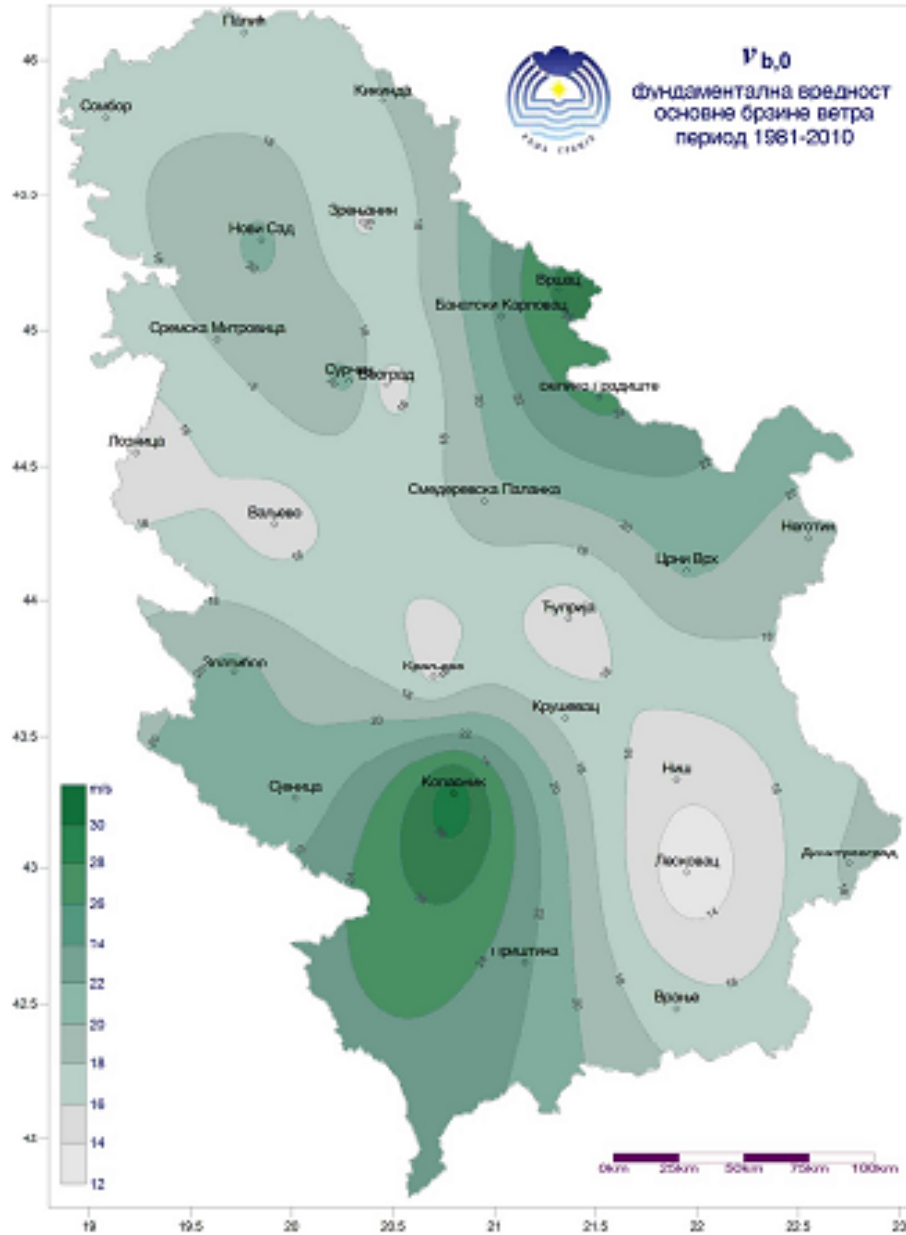


Snow load map (to be corrected)

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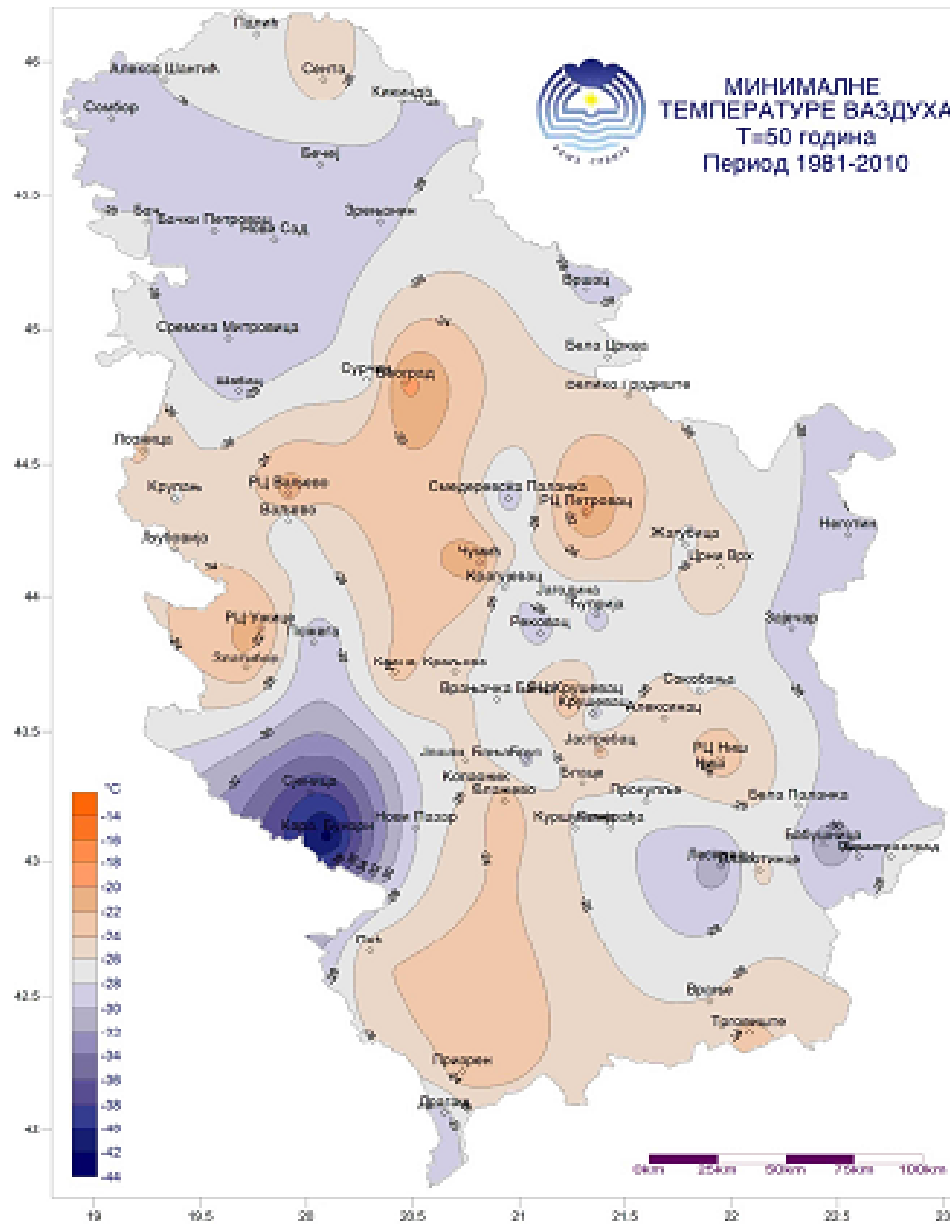


Wind actions (to be corrected)

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Temperature minimum
(to be corrected)

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Difficulties and needs (1)

Difficulties for adoption of NDPs and NAs for some Eurocodes:

- Inadequate progress of adoption of NDPs with values different than the recommended.

Needs:

- For development of certain NDPs, there is a need for increasing the number of experts and greater involvement of different stakeholders.



Difficulties and needs (2)

Difficulties for adoption of NDPs and NAs for Eurocodes - actions on structures:

- Inadequate progress in adoption of NAs because the maps received from the Hydro Meteorological Institute of Serbia are not fully compatible with the real situation.

Needs:

- Strengthening cooperation between the Hydro Meteorological Institute and technical committee members with the aim to improve methodology for maps finalization.
- Increasing regional cooperation in determining NDPs and in data exchange, especially in the areas of national borders.



Next steps

- Preparation and publication of technical regulations for implementation of all Eurocodes (for all kinds of structures and actions).
 - Proposal of technical regulations for steel structures regarding the Eurocodes is prepared. The legislation is in progress.
 - The working group for design and construction in civil engineering regarding the Eurocodes is planned to be established at the state level soon.
- Preparation and organisation of training courses - workshops for permanent education of engineers.
- Preparation and publication of appropriate literature.
- Translation and publication of new set of Eurocodes (e.g. for bridges and fire resistance).
- Promotion and implementation of Eurocodes in practice.



Thank you for your attention!

