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**4. trienalni znanstveni posvet
Dan Bojana Ušeničnika – Naravne nesreče v Sloveniji 2017
lg pri Ljubljani, 28. marec 2017**

Trajnostni razvoj mest in naravne nesreče

**KREPITEV ODPORNOSTI DRUŽBE NA NARAVNE IN
DRUGE NESREČE IN PREHOD V NIZKOOGLJIČNO
DRUŽBO V SLOVENIJI**

Matjaž MIKOŠ

RIGHT UL FGG & UNESCO WRDRR UL & IAS & IZS & ASCE & ICL



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Uvod

Hipoteza:

**Krepitev odpornosti družbe na naravne in druge nesreče
(naj?) gre z roko v roki s preходом v nizkoogljico družbo.**

Vprašanja:

Zakaj tako razmišljanje?

Ali so stvari medsebojno povezane?

Je to smer razvoja samo v Sloveniji ali tudi drugod?

Ali uresničujemo mednarodne zaveze?

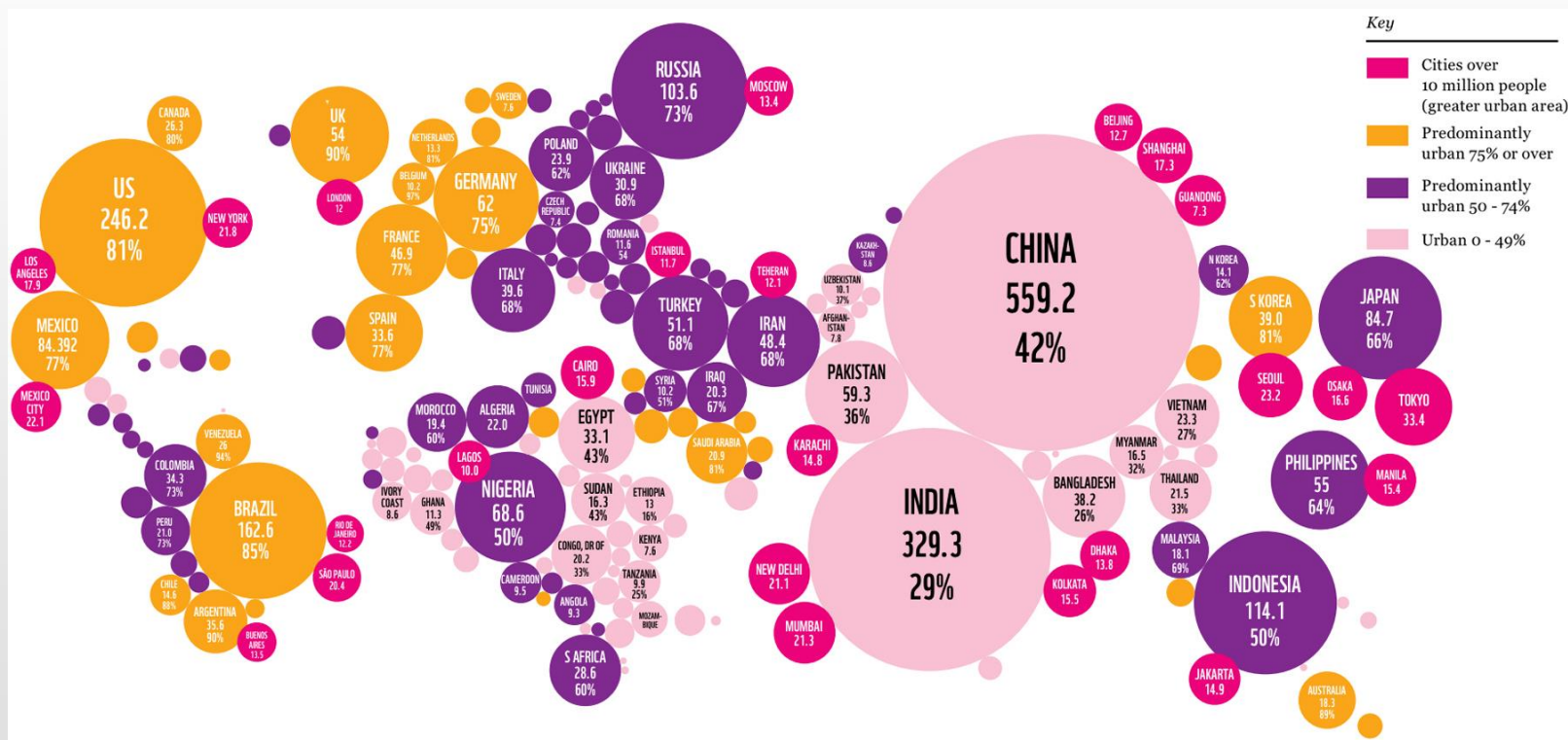


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Urbanizacija v svetu



Do l. 2050 naj bi svetovno urbano prebivalstvo naraslo s 3,9 mrd (54 %) na 6,4 mrd (67%) z vsemi posledicami – naravne nesreče vs. trajnostni razvoj: krožno gospodarstvo, pametna mesta in stavbe, ...

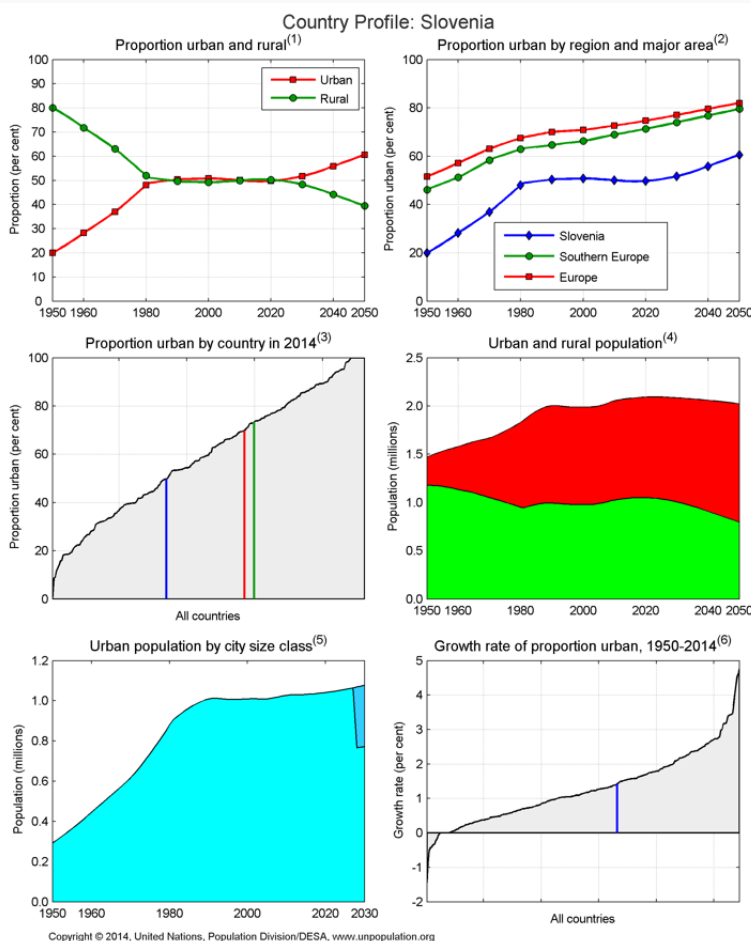


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Urbanizacija v Sloveniji



Notes

- (1) Proportions of urban and rural population in the current country or area in per cent of the total population, 1950 to 2050.
- (2) Proportions of urban population in the current country as compared to the major area and region in which this country is located. The proportion is expressed in per cent of the population between 1950 and 2050.
- (3) Proportion of urban population in the current country (blue line), major area (red line) and region (green line) as compared to the ranked urban proportions of all countries of the world (gray area). The figure illustrates, what level of urbanization a country has compared to its major area and region, as well as compared to all other countries of the world.
- (4) Urban and rural population in the current country.
- (5) Urban population of the current country by size class of its urban agglomerations in 2014. The light blue area is a residual category, which includes all cities and urban agglomerations with a population of less than 300,000 inhabitants. The size classes correspond to the following legend:



- (6) Average annual growth rate of the urban population of the current country between 1950 and 2014 (blue line), as compared with the average annual growth rates of the urban population of all countries of the world (gray area). The figure illustrates that urban growth rates between 1950 and 2014 were positive in the great majority of the countries of the world. Only a few countries had negative urban growth rates - indicating that their urban proportion was declining between 1950 and 2014. Due to limitations of space official country names had to be abbreviated in the figure legends.

- Dokaj stabilne razmere, večje spremembe šele po l. 2023.
- Nižja urbanizacija kot v J Evropi in Evropi (~ 50%).
- Rast urbanizacije 1950 – 2014 nekaj preko 1%.
- Ni velikih aglomeracij (300.000).



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Naravne nesreče in trajnostni razvoj mest

Mnogi naravni dogodki, ki oblikujejo zemeljsko površje, so tako intenzivni ali nepredvidljivi, da se pogosto v človekovi zavesti zarežejo v spomin kot naravne nesreče.

- ☐ **Snežni plazovi in zemeljski plazovi** (masna gibanja vseh oblik in hitrosti: površinsko plazenje, usadi, plitvi in globoki plazovi, kamninski zdrs, padajoče kamenje, skalni podori)
- ☐ **Hudourniške, rečne, nižinske, kraške, urbane poplave, poplave jezer in morij** – pogosto spremljane s plavjem, blatom ali drobirjem (izbruhi hudournikov, blatni in drobirski tokovi).
- ☐ **Potresi** – rušijo stavbe in drugo infrastrukturo ali prožijo naravne pojave (padajoče kamenje, skalni podori, popotresni valovi – tsunamiji, ...).
- ☐ **Požari** v naravnem okolju in grajenem okolju.

vročinski valovi, suše, žled ... energija, voda, hrana





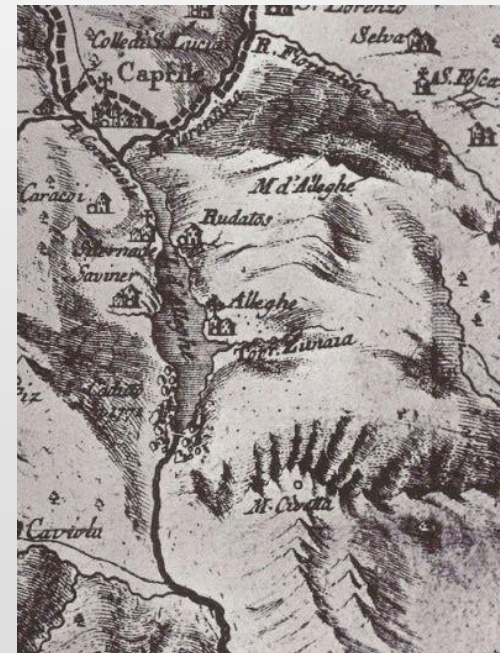
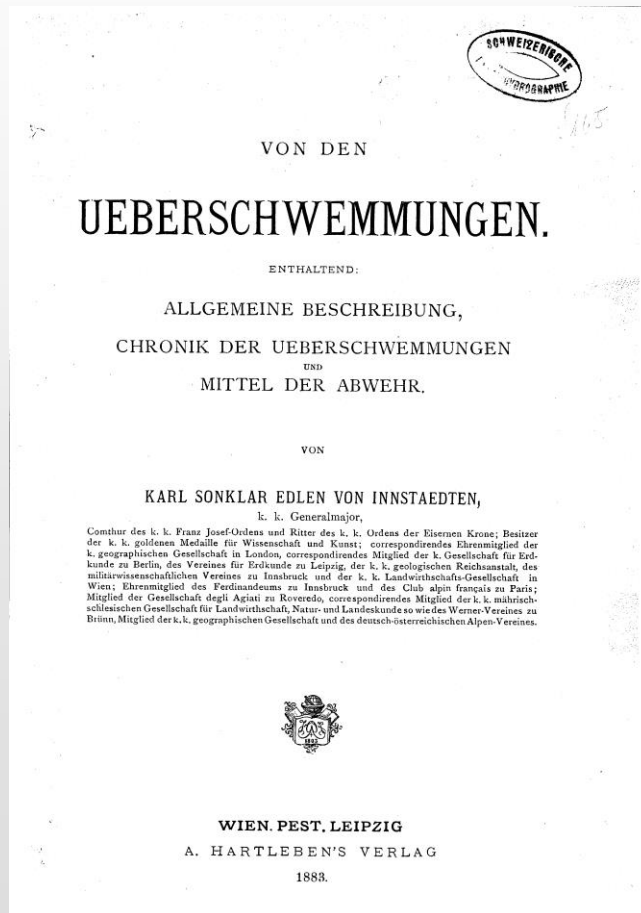
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Rare Events but Strong Consequences

Dolomiti: 11.1.1771 - ~ 10 mio m³ velik skalni podor z gore Piz zajezi reko Cordevole in ustvari jezero Alleghe – maja 1771 nov podor ~3 mio m³ v jezeru ustvari plimni val.



Vir: <http://www.alexandria.admin.ch/bv00643547.pdf>

<https://blogs.scientificamerican.com/history-of-geology/january-11-1771-the-birthday-of-lake-alleghe/>



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Rare Events but Strong Consequences

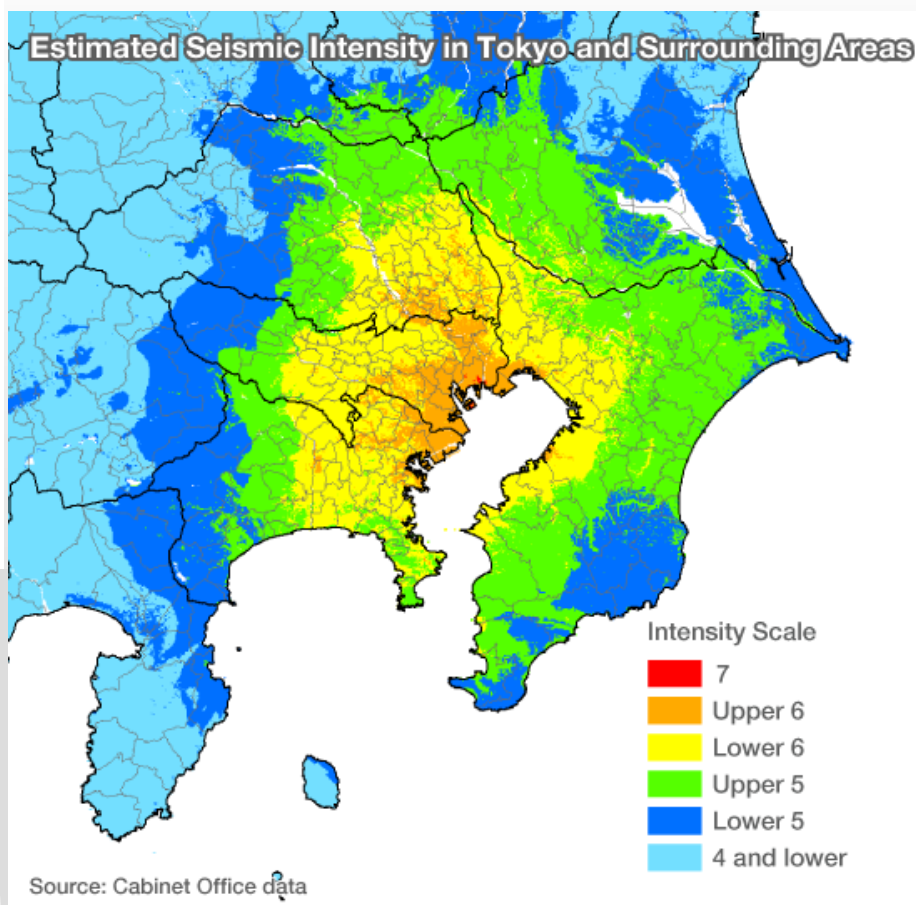


Današnji pogled na goro Piz in pobočje skalnega podora iz l. 1771.

Foto avtor, marec 2017



Potres Tokyo 1923, Fukushima 2011, ...



Estimated Casualties and Damage in Tokyo Metropolitan Area

	Dead	23,000
	Victims needing medical attention	72,000
	Buildings damaged or destroyed	610,000
	Residents unable to return home	8 million

Great East Japan Earthquake figures
▶▶ 18,500 (including missing)

▶▶ 122,000

nippon.com

Potres I. 1923 (Great Kantō Earthquake) je imel magnitudo 7,9 po Richterju in je zahteval več kot 100.000 življenj.

Strokovnjaki ocenjuje, da je s 70% verjetnostjo možen nastop potresa z magnitudo 7+ v naslednjih 30 letih.

Žrtve in škoda zaradi potresa in požarov po njem.



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Tokyo Inland Earthquake 20xx

Plan for Specific Activities Based on the "Emergency Action Plan for the Tokyo Inland Earthquake" (Overview)

○ Plan emergency transport routes for rescue units and goods, details for procuring supplies, and details regarding dispatch of troops for each region beforehand based on damage estimations, etc.

○ Initiate dispatch of troops, medical activities, and procurement of supplies immediately based on plans after earthquake has occurred, starting from the stage when there is no information on the state of damages, etc.

○ Urgent implementation of emergency measures such as rescue activities and medical care. Adjust contents of activities in accordance with information on the state of damages, etc.

[Image diagram of activities]



[Overview of damage estimations]

Number of buildings completely collapsed or seriously damaged	Approx. 195,000 buildings
Number of deaths	Approx. 11,000 people
Number of seriously injured people	Approx. 39,000 people
Number of people living in temporary housing	Approx. 4.6 million people

(Under the conditions of 6 P.M. on a winter day and a wind speed of 15 m/s)

Procurement of supplies

*Amount of procurement of supplies represents 1 week's worth after occurrence of disaster

To Saitama prefecture
Drinking water: Approx. 3,200 t
Food: Approx. 10.3 million meals
Formula milk: Approx. 1.2 t
Blankets: Approx. 179,000
Diapers: Approx. 225,000

To Ibaraki prefecture
Food: Approx. 400,000 meals
Formula milk: Approx. 0.1 t

To Tokyo
Food: Approx. 31.8 million meals
Formula milk: Approx. 6.6 t
Blankets: Approx. 37,000
Diapers: Approx. 387,000
Temporary toilets: Approx. 1,110

To Kanagawa prefecture
Food: Approx. 16.9 million meals
Blankets: Approx. 166,000

To Chiba prefecture
Drinking water: Approx. 13,300 t
Food: Approx. 15.7 million meals
Formula milk: Approx. 5.3 t
Blankets: Approx. 559,000
Diapers: Approx. 567,000
Temporary toilets: Approx. 1,740

Dispatch of backup units

* Number of backup units dispatched represents a maximum value

Scale of dispatch (Total)
117,240 people

To Saitama prefecture
National Police Agency: 530 people
Fire and Disaster Management Agency: 1,400 people
Ministry of Defense: 4,200 people
Total: 6,130 people

To Tokyo
National Police Agency: 16,820 people
Fire and Disaster Management Agency: 9,900 people
Ministry of Defense: 16,400 people
Total: 41,890 people

To Kanagawa prefecture
National Police Agency: 730 people
Fire and Disaster Management Agency: 1,000 people
Ministry of Defense: 9,200 people
Total: 10,930 people

To Chiba prefecture
National Police Agency: 1,440 people
Fire and Disaster Management Agency: 360 people
Ministry of Defense: 1,500 people
Total: 3,300 people

General support
55,400 people
(This wide dispatch estimate is interpreted as actual)

Wide-Area Medical Transportation

Target number of transported patients
423 people

Wide-area medical transportation is applicable to seriously injured people for whom treatment within the relevant prefecture is difficult, and for whom rescue is determined as being possible by transporting the patient to a wide-area logistical medical facility and administering treatment.

* Transportation between 8 and 12 hours after occurrence of disaster

JGSDF Camp Suwayama
Matsumoto Airport
JASDF Hamamatsu Airbase
Osaka International Airport
Kobe Airport, etc.

JASDF Iruma Air Base
JGSDF Camp Tachikawa
JMSDF Atsugi Air Base
JMSDF Shimofusa Air Base
Atsugi-no-Oka Basic Wide-Area Disaster Prevention Base
Haneda Airport

Saitama Airport
Matsushima Air Base
JGSDF Camp Kita-Utsunomiya

Komatsu Airport
Osaka International Airport
Mito Airport
Takamatsu Airport
Fukuoka Airport

New Chitose Airport
Sendai Airport

Number of DMATs (disaster medical assistance teams) dispatched: 160 teams

● Wide-area transportation base within disaster area
Blue: Medical team gathering base
Red: Wide-area transportation base outside of disaster-stricken area



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Mednarodne zaveze

Ratifikacija Pariškega podnebnega sporazuma (ratifikacija v DZ RS 17.11.2016: 76 glasov za, nihče proti).

**Podpis Agende 2030 s cilji trajnostnega razvoja:
... trajnostni razvoj mest in lokalnih skupnosti...**

Sustainable Development Goals



Sendajski okvir za zmanjšanje tveganja nesreč 2015 – 2030.

**Fiskalno pravilo v Ustavi RS - živeti v skladu s svojimi možnostmi.
Ni dovolj denarja za vse: želje velike, potrebe tudi, postaviti
prioritete, doseči socialni dogovor: toda kako?**



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Podpora **preventivnemu** varstvu pred naravnimi nesrečami

Razpad sistema vodarstva (hudourništva) - strokovno in finančno podhranjena dejavnost. Kdo je „vodar“?

Povečevanje poplavne ogroženosti – večanje poplavnih škod, smrtnih žrtve. Premalo vlaganj, redno vzdrževanje, ki to ni,

Premalo domačih strokovnjakov – nezanimiv tehniški študij, inženirski poklic zapostavljen, ni ustreznih vsebin v gimnazijah.



Prihajajo „vodoupravljalci“.

Vir: Slovenski vodar 10, str. 53, 2000 - http://www.drustvo-vodarjev.si/SLIKE/04_SLOVENSKI_VODAR/SV10.pdf





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Odprte dileme

Fiskalno pravilo v Ustavi RS - živeti v skladu s svojimi možnostmi. Ni dovolj denarja za vse (želje). Sklep: denar pametno vlagati. V kaj?

Razvoj in inovacije (Strategija RISS)? Vzgojo in izobraževanje?

Inovativno zeleno gospodarstvo? Nova delovna mesta?

Kakovostno življenje v starosti?

Varstvo pred naravnimi nesrečami? - kjer se vložek (glavnica) vrne z nekaj 100% obrestno mero.

Ali v naložbe z letnim donosom 4 ali 5%?

Varstvo pred naravnimi nesrečami, krepitev odpornosti družbe na naravne nesreče, preventivno delovanje v vseh segmentih in pri vseh odločitvah naj bo sestavni del miselnega preboja v družbo znanja, zeleno in krožno gospodarstvo ter trajnostni razvoj mest.





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Odprte dileme

Ob energetske prenovi objektov dati poudarek tudi istočasni potresni (statični) prenovi objektov.

V strategijo pametnih mest vključiti ne le zahteve prehoda v nizkoogljično družbo (promet, onesnaževanje zraka, tal in vode, poraba energije, pridelava hrane?), temveč tudi odpornost družbe na naravne nesreče (protipotresna gradnja, protipoplavna gradnja, nestrukturni ukrepi, preventiva, sistemi za zgodnje opozarjanje, ...).

Vključitev vseh deležnikov v krepitev odpornosti družbe: Civilna zaščita, konference o vodah, načrti zaščite in reševanja, javne obravnave rezultatov določanja ogroženih območij (kart nevarnosti in ogroženosti).

Kdaj prenova Zakona o vodah? Kdaj bodo izdelane karte vseh ogroženih območij po obstoječem Zakonu o vodah (2002) in ne le poplavne karte?



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Zahvala

Vabljeni na:

3. Regionalni simpozij o zemeljskih plazovih Jadransko-balkanskega območja (Ljubljana, 11.-13.10.2017): www.geo-zs.si/ReSyLAB2017/
4. svetovni forum o zemeljskih plazovih (Ljubljana, 29.5.-2.6.2017): www.wlf4.org

***... dilema
ostaja ...***

**Ne vprašaj, kaj naj
naredi država za
tebe, stori sam, kar
(z)moreš (in znaš)!**

