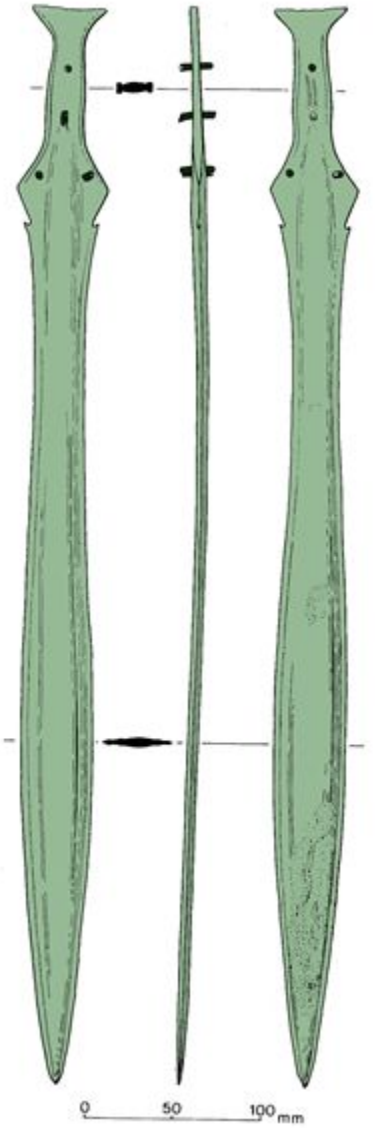
Field-school in Serbia 2010

Excavations and mapping of Bronze Age sites

To find out more visit depthome.brooklyn.cuny.edu/anthro/jadar

The Bronze Age

- Period in which *bronze* was the material predominantly used to make functional parts of implements
- Brings new dynamics between Near East and Europe
- Title *Bronze Age* used for classification to signify a stage in technological evolution



European Bronze Age Chronology – 2200-1050 B.C.E.

Early Bronze Age (2200-1600)

Middle Bronze Age (1600-1300)

Late Bronze Age (1300-1050)

Absolute Chronology markers

- Unetice cemetery (near Prague, Czech Republic)
- Helmsdorf & Leubingen graves (Germany)
- Mycenaean Shaft Graves (Greece ~1650-1450)
- Danish coffin graves

Dates:
Leubingen – 1942+-10 BC
Helmsdorf – 1840+-10 BC

Bronze

- Made by alloying copper with tin

- As a strategic resource bronze quickly becomes fundamental in economic production and social reproduction

From Copper Age to Bronze Age

- Abrupt transition to Bronze Age over a large area
- COPPER present in many places, but TIN is rare in the Near East
- It is still a mystery to archaeologists: where exactly did bronze-smiths get their tin from?

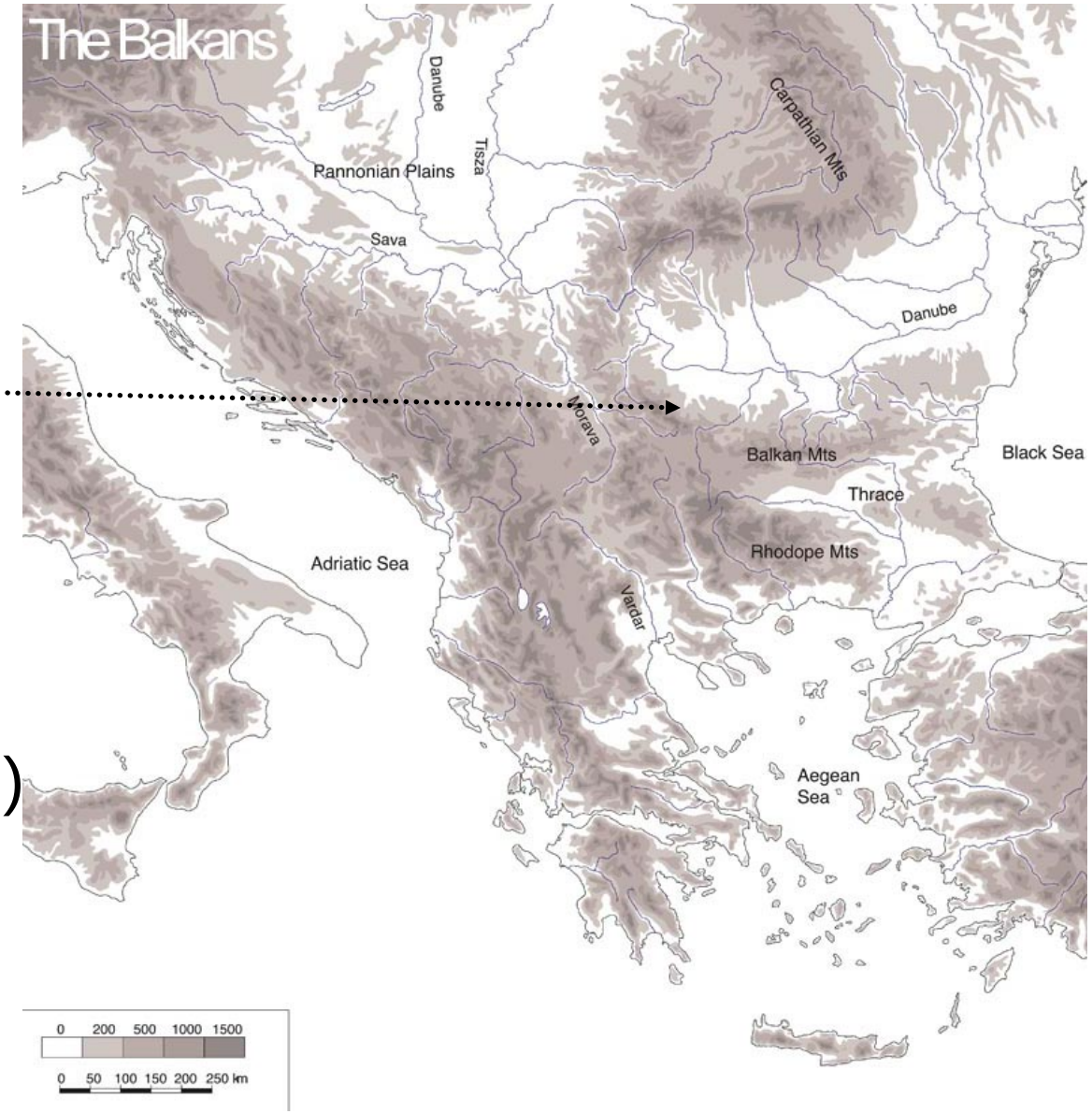
From Copper Age to Bronze Age: **Tin**

- Present in very few places in Europe, but not clear whether it was actually mined by Bronze Age people in any of these:
  - Brittany
  - Cornwall
  - Border between Czech Republic and Germany
  - Iberia
  - Tuscany and Sardinia

(many areas didn't even have **copper**, let alone tin)

Copper mining and smelting

- Earliest evidence in Europe: in the Balkans - in Bulgaria and Serbia (4500 B.C.E.)



Significance

- It was important for societies to obtain bronze
- Majority of societies had neither copper nor tin,
- Which lead to massive increase in exchange,
- Exchange systems controlled by emerging elites

Objects made of bronze

- Bronze becomes a standard value very quickly
(rapid decline in use of other copper alloys)

- Bronze artefacts:

Melted & recast –
adjusting to local style of production

= commoditization

Emergence of elites

- Control over long-distance trade through series of concentrated settlements (like in the Carpathian mountains)

- Later (mid 2nd millenium) trade concentrates on small-scale networks.

- Finds of fragmented bronze, often collected in hoards (like the 1,300kg bronze hoard *Uioara de Sus* in Romania)

Position of Carpathian Mts

Our project studies economic and social significance of metalworking in Europe

- Effects of metalworking on small communities
- Long-term effects on society in general
- Connections and communications

Possible directions of metal trade?

- British Isles → Central Europe → Aegean
- Iberian Peninsula → Aegean
- Serbia → Aegean
- Central Europe → Aegean

- Directions shown by study of amber route & Myceneaen (Aegean) import

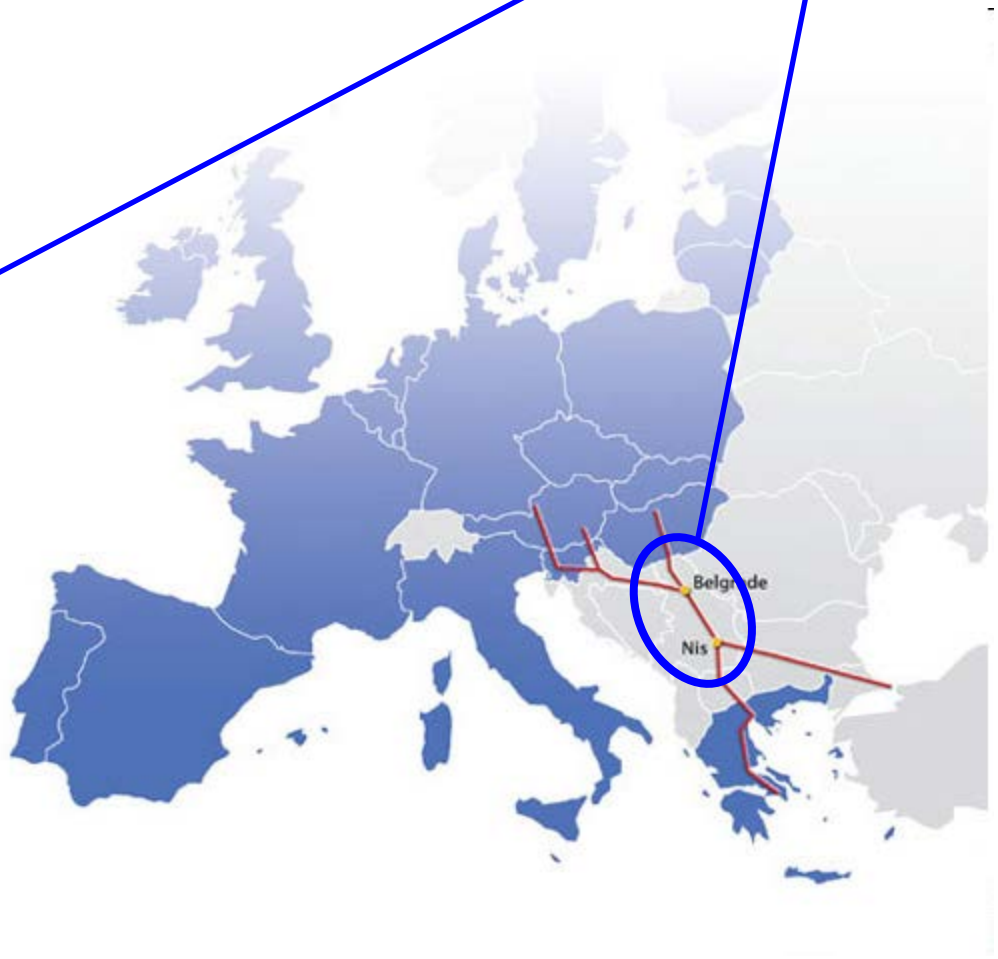
- Bronze becomes a cultural norm in Europe from 1700 B.C.E.

Communications: International routes

The Danube Corridor

Communications: International routes

connecting north and south of Europe, going through Serbia



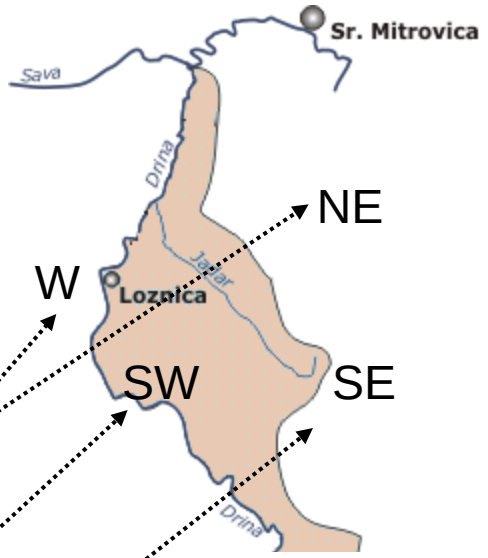

CENTRAL BALKAN REGION
SLOVENIA
HUNGARY
CROATIA
ROMANIA
Vojvodina
BANAT
BOSNIA AND HERZEGOVINA
Republika Srpska
Federation of Bosnia and Herzegovina
Serbia
Montenegro
Kosovo
ALBANIA
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
GREECE
BULG.
Adriatic Sea
Strait of Otranto
Zagreb
Sarajevo
Belgrade
Podgorica
Skopje
Tirana
Pannonian Basin
Dinaric Alps
Transylvanian Alps
Balkan Mts.
Sr. Mitrovica
Study area:
Jadar,
region where TIN source is reported

Jadar, Western Serbia

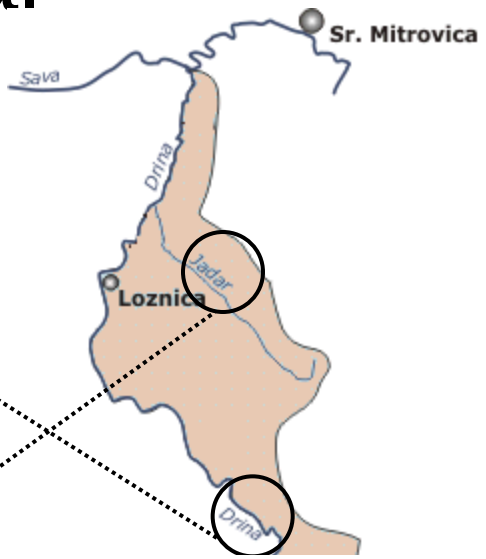
- Refers to the Jadar river basin, and the area named *Jadar* in west Serbia.

Boundaries:

- NE: **Cer** Mountain
- SW: **Gučevo** Mountain
- W: The river Drina.
- SE: Flat and open



Geological and morphological characteristics of Jadar



- Area with the lowest altitude is situated between the Drina river in the west and hills in the east (alluvial plain of the Drina River).

- The other alluvial plain is that of the Jadar river; its average width is approximately 1800 meters.

Geological and morphological characteristics

- Relief of Jadar around the river is hilly.
- Recognized as a major mining area, that has been in use at least since the Roman times.
- Despite clearing efforts in the past, this region is for the most part still under forests and under-researched.
- South and north boundaries of Jadar are low mountains.

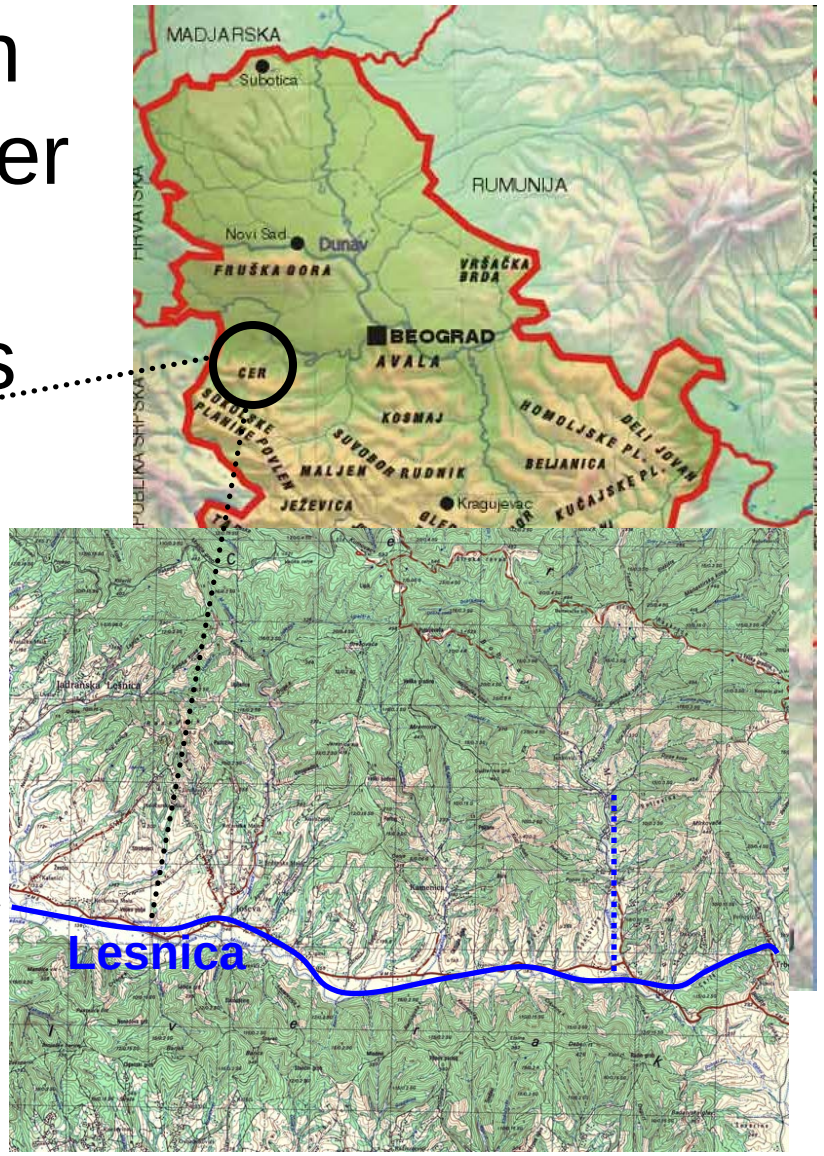
- The highest is the **Gučevo** Mountain.
  Its summit is at the altitude of 779 meters.

- In the north part of Jadar is the **Cer** Mountain, 687 meters high.

- The **Iverak** Mountain's (426 m) northern side descends towards the Lešnica river valley.

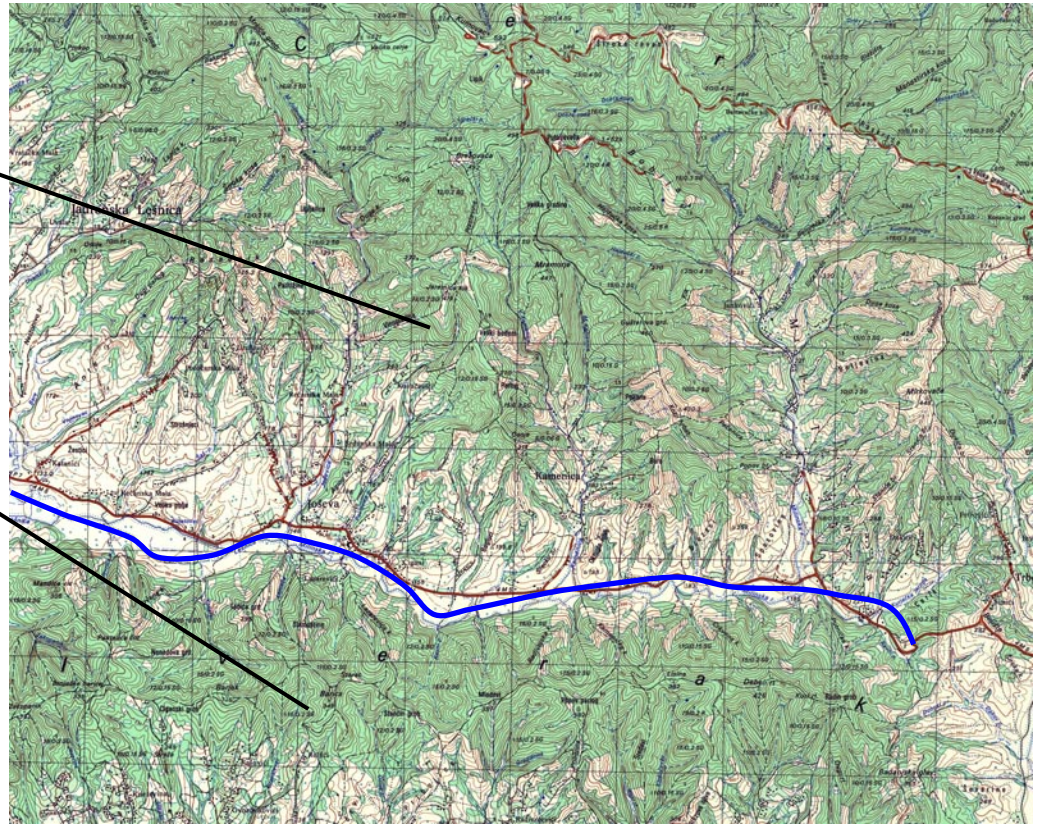
- North of the Jadar plain is the small Lešnica river valley which is situated between the mountains **Iverak** and **Cer**.

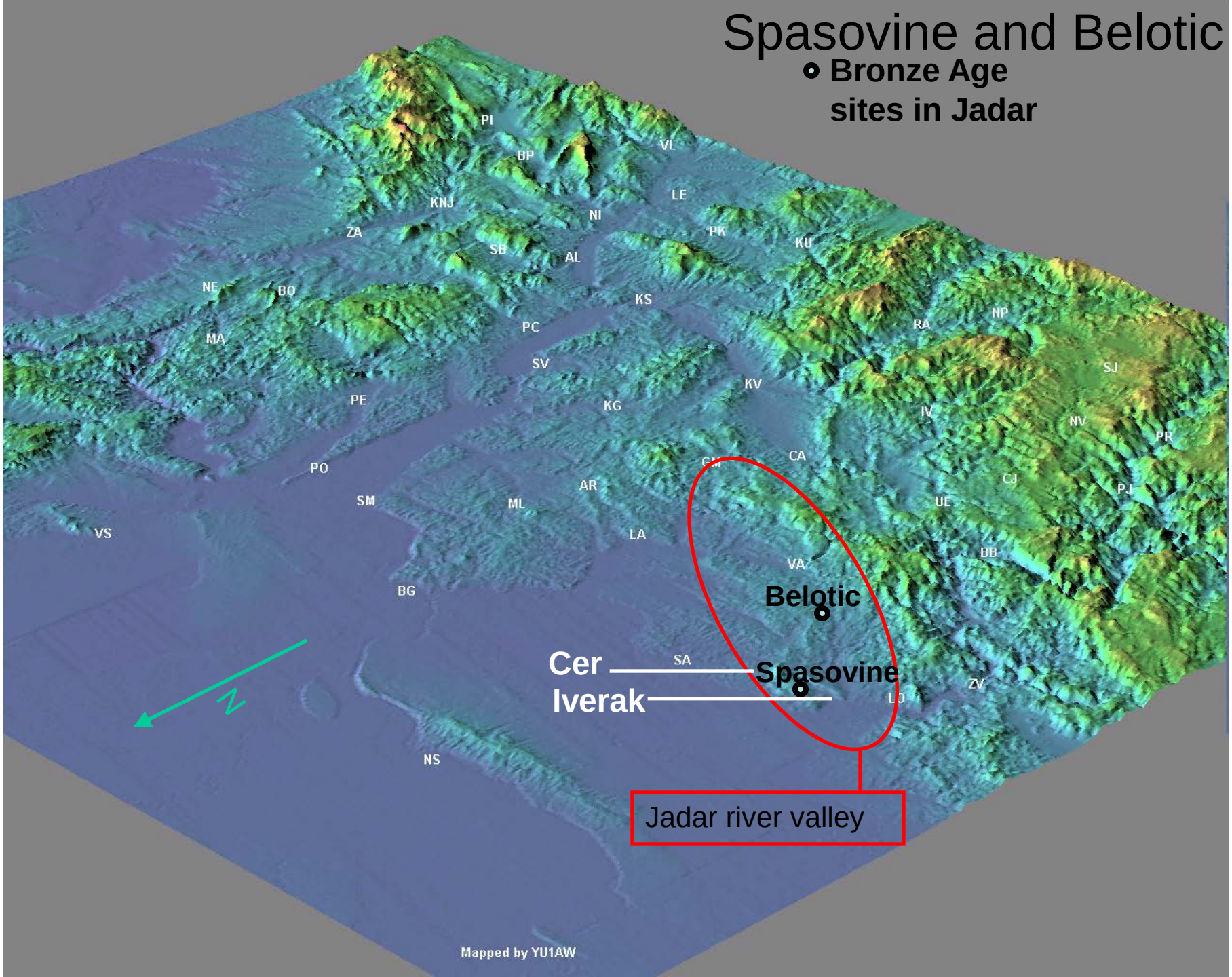
- That is where a tin source is located.



- Right side of the Lešnica valley (the Cer side) is about three times wider than the left side (the Iverak side).

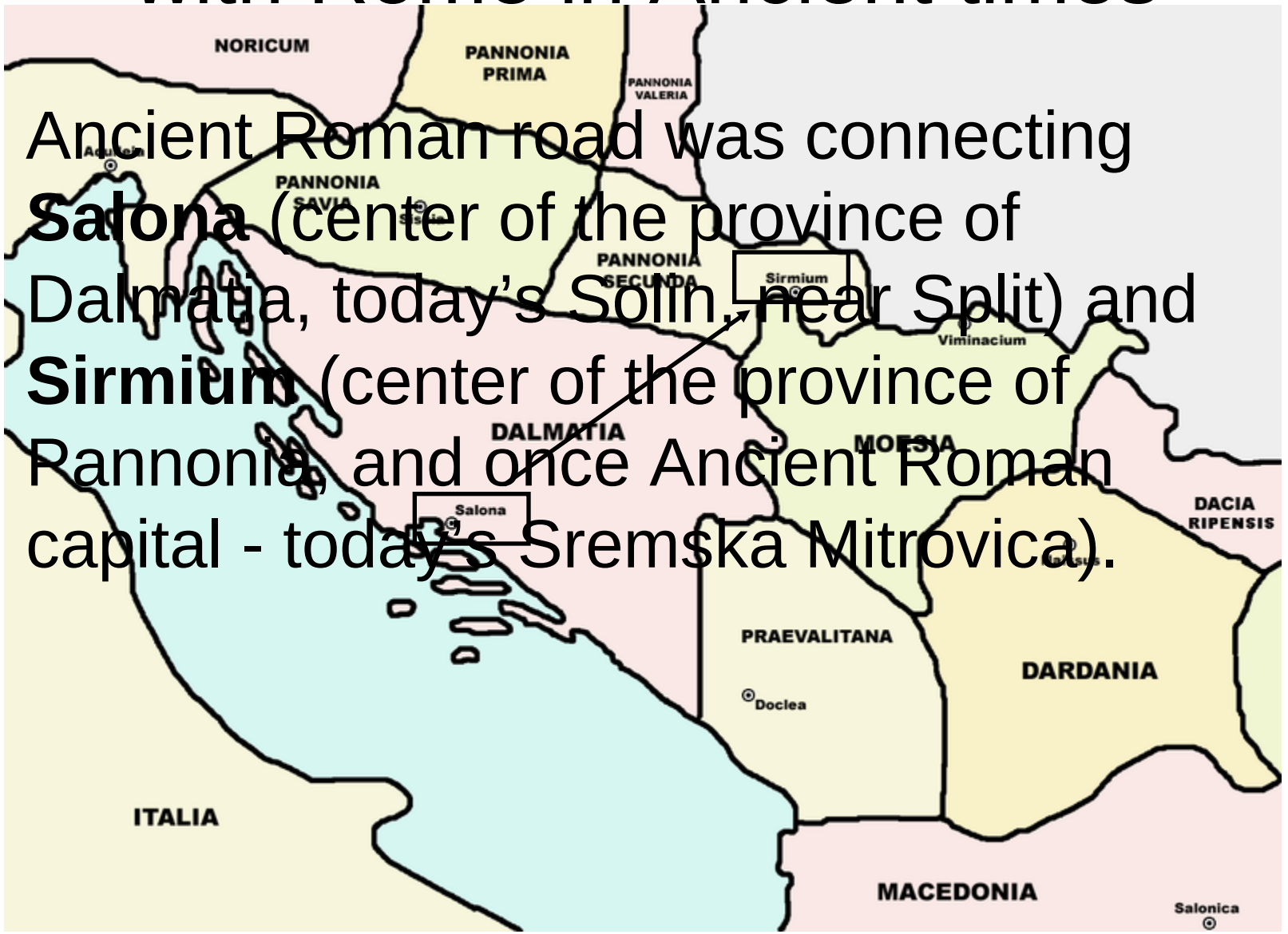
- A consequence of this is that the Cer mountainsides are mostly cleared and populated while the Iverak mountainsides are still under forests and uninhabited.




Spasovine and Belotic
Bronze Age sites in Jadar
PI
BP
VL
KNJ
LE
NI
ZA
PK
KU
SB
AL
NE
BO
KS
NP
PC
RA
MA
SV
SJ
KV
PE
KG
IV
NV
PR
CA
PO
CJ
AR
PJ
SM
ML
UE
VS
LA
BB
VA
BG
Belotic
Cer
SA
Spasovine
ZV
Iverak
LO
N
NS
Jadar river valley
Mapped by YU1AW

Roads connecting mining districts with Rome in Ancient times

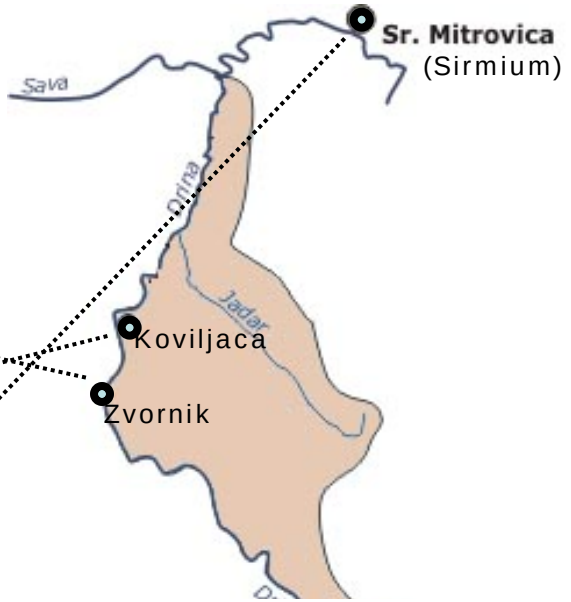
- Ancient Roman road was connecting **Salona** (center of the province of Dalmatia, today's Solin, near Split) and **Sirmium** (center of the province of Pannonia, and once Ancient Roman capital - today's Sremska Mitrovica).

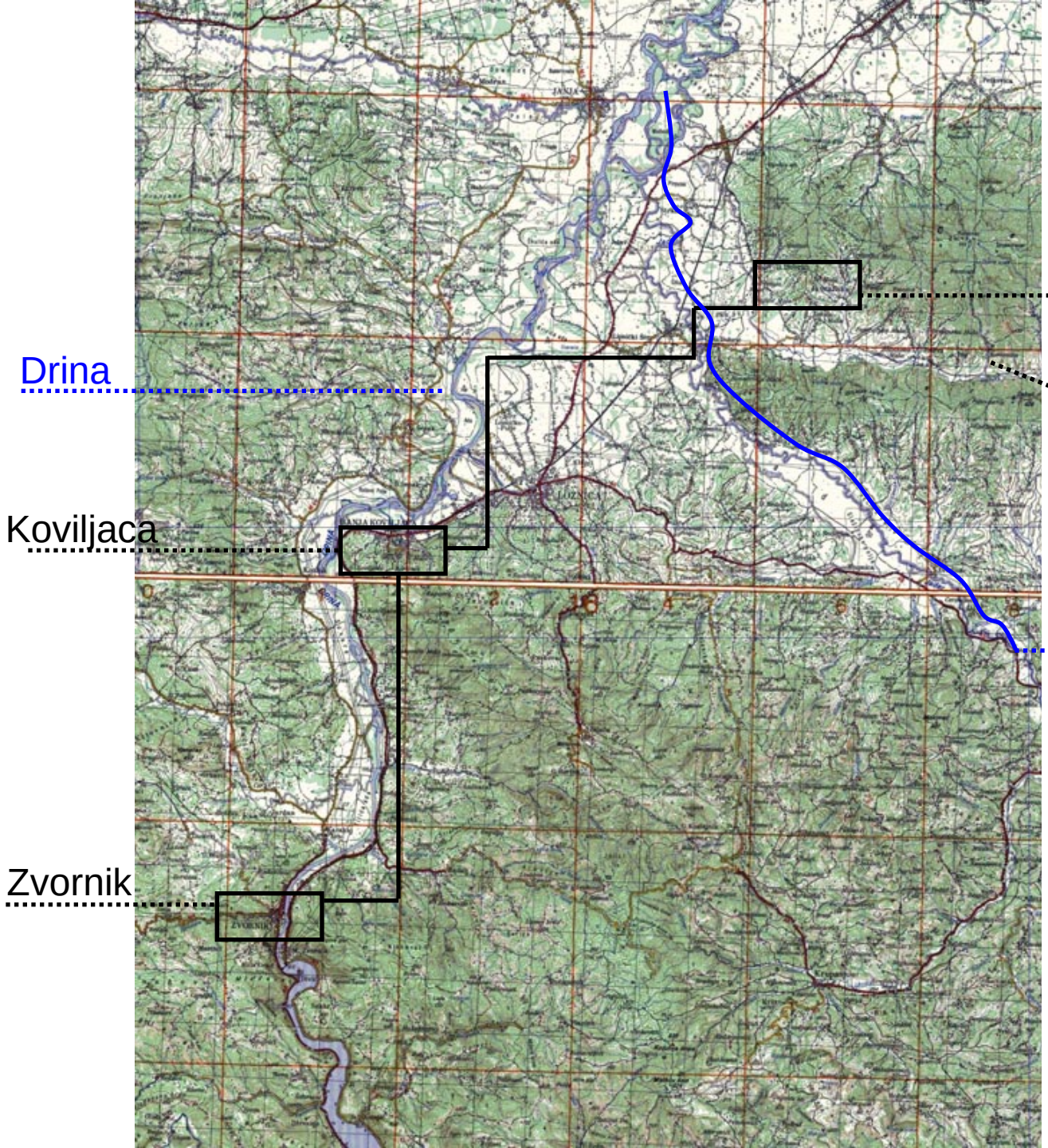


Focus site **Spasovine** in the wider context

- One section of the road also passed through the area of Jadar.
- Historical sources mention that the last road station on the road through Jadar was the town *Gensis* (today's **Jadranska Lešnica** near our site Spasovine).
- Remains of the described road were visible until the middle 19th Century.

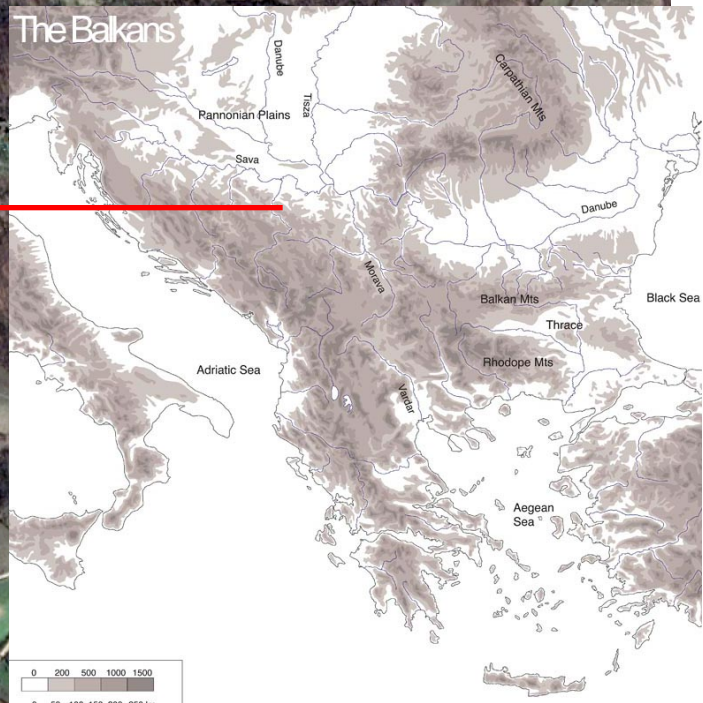
- Its entry point was near today's Zvornik, where the road passes from the Bosnian side.
- From Zvornik the road followed the bank of the Drina until today's Koviljača.
- From this place, the road continued along the north of Gučevo Mountain, and then followed the western sides of Iverak, where it went towards Sremska Mitrovica (Ancient Roman Sirmium).





Segment of Ancient Roman road from **Zvornik** via **Jadranska Lesnica** to **Sirmium**

Position of the site **Spasovine**, the only Bronze Age settlement found so far in the wider area

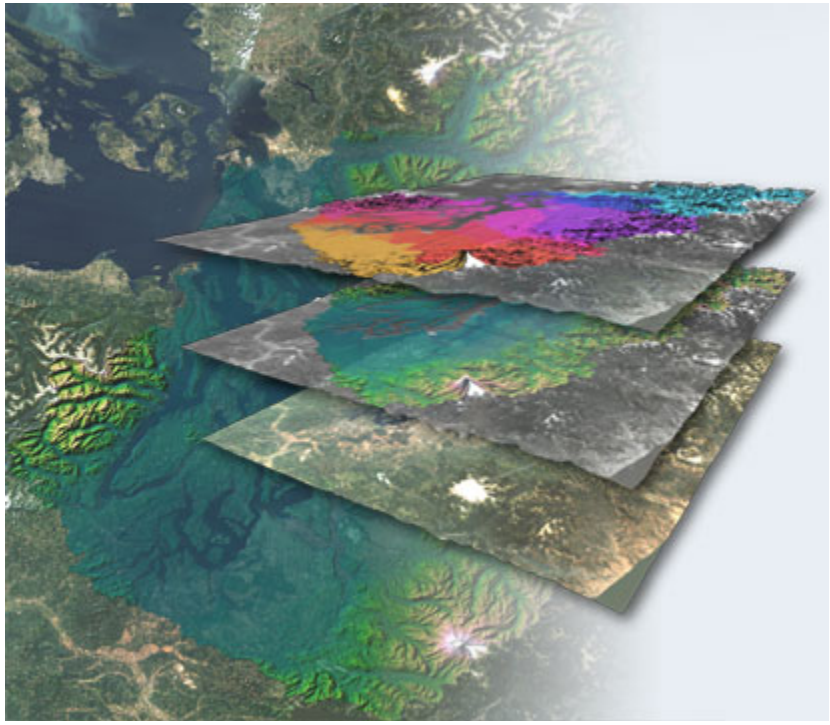


Pointer 44°34'49.71" N 19°28'02.88" E elev 234 m


Spasovine may also be the only Bronze Age settlement close to a confirmed tin ore source
Tin bearing stream flowing into Lesnica
© 2008 Europa Technologies
Image © 2008 DigitalGlobe
©2007 Google™
Pointer 44°34'50.34" N 19°27'57.60" E elev 203 m
Streaming 100%
Eye alt 1.15 km

Goals of the project

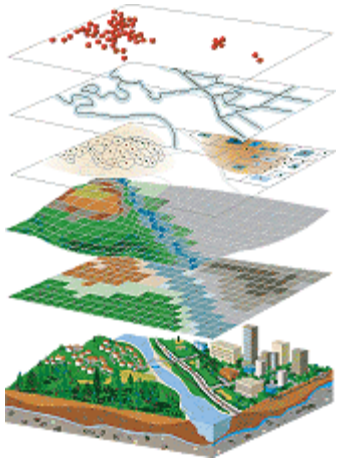
- Mapping occurrences of minerals, trace metals, and formations
- Finding, mapping, surveying, and excavating archaeological sites
- Environmental monitoring
- Hydrogeology and surface geology
- Modeling connections between sites and resources



To find other Bronze Age sites, the project will work on:

- magnetometry & electro-resistivity
- soil chemistry,
- phosphate, and
- remote sensing analysis

Then combine data from geomorphology, archaeology and geophysics in Geographic Information Systems (GIS).



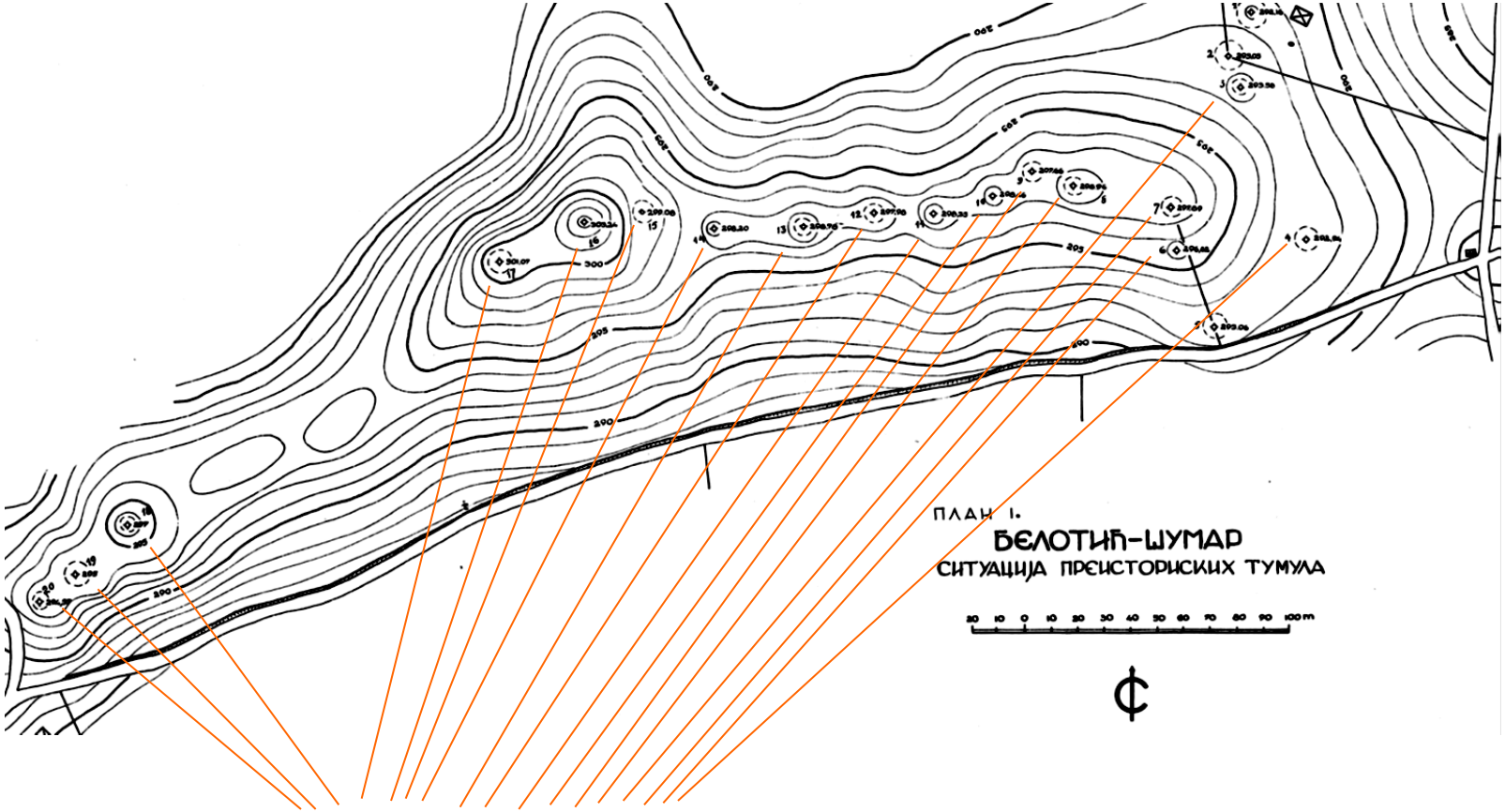
Vegetation, visibility, position

Mapping extant vegetation is vital.

Finding out (through GIS) what the points are from which the Bronze Age cemeteries are visible.

Identifying places in the survey region where sites may not have been discovered because of poor visibility.

Position of grave mounds at the Bronze Age cemetery **Belotic**



Why are they there?

Modeling

- What factors drew prehistoric populations to certain places? (water, clay, stone, copper, tin, ancestors…)
- We want to find correlations btw site locations and the proximity of *environmental variables*
- How particular patterns of human land-use will be reflected in the archaeological record?
- Maps & GIS
- Site-centered modeling – elevation, slope, diversity, human eco-dynamics…
- And modeling of whole systems instead of sites only

To find out more visit depthome.brooklyn.cuny.edu/anthro/jadar

To find out more visit depthome.brooklyn.cuny.edu/anthro/jadar