

International Summer School
Tree Rings, Climate, Natural Resources and Human Interaction
12-24 August 2018, Cheryomushki, Khakassia, Russia

Sunday 12 August: Arrival day

Arrival to International Airport “Abakan” according to the tickets

10:00 City tour in Abakan

12:00 Lunch

13:00 Transfer to Cheryomushki

19:00 Dinner

Monday 13 August: 2 Lectures

8:00 Breakfast

9:00 Welcome statement and introduction about the course and organization meeting
(**Pr. E.A. Vaganov, Pr. E.A. Babushkina, R. Touchan, D. Meko**)

10:00 Lect. 1 Introduction to dendrochronology (**R. Touchan**)

11:30 Lect. 2 Xylem and how it is formed – annual ring formation, cambial division
(**L.V. Belokopytova, PhD**)

12:30 Lunch

14:00 Lab 1. Exercise

19:00 Dinner

19:30 Welcome party

Tuesday 14 August: Field trip

8:00 Breakfast

9:00 Leaving to the field

9:30 Lect. 3 Site and tree selection, sampling strategies, and field techniques Scientific Basis
of Dendrochronology (**R. Touchan**).

10:30 Lab 2. Field collections (Remainder of the day)

19:00 Dinner

Wednesday 15 August: Lectures and sample preparation

8:00 Breakfast

9:00 Lect. 4 Scientific basis of dendrochronology Dating: What is it? How is it done?
(**R. Touchan**)

10:15 Lect. 5 The history of Dendrochronology in Russia (**Pr. E.A. Vaganov**)

12:30 Lunch

14:00 Lab 3. Sample preparation

18:00 General discussion

18:30 Before dinner talk by one of the participants (30 min)

19:00 Dinner

Thursday 16 August: Lectures and Laboratory

8:00 Breakfast

9:00 Lect. 6 What can we measure? – State of tree ring (total width, earlywood width, latewood width, cell sizes, density, isotopes, other chemistry), trauma (scars, anomalous anatomy such as frost rings, light rings, white rings, etc. (**R. Touchan**))

- 10:15** Lect. 7 Introduction to Dendroecology (**R. Touchan**)
- 12:30** Lunch
- 14:00** Lab 4. Continue sample preparation and dating the prepared samples
- 18:00** General discussion
- 18:30** Before dinner talk by one of the participants (30 min)
- 19:00** Dinner

Friday 17 August: Lectures and Laboratory

- 8:00** Breakfast
- 9:00** Lect. 8 From tree-ring anatomical traits to tree-ring functional properties: whether it is possible to evaluate functional properties of conifer tree-rings? (**Pr. I. Sviderskaya**)
- 10:15** Lect. 9 COFECHA (**R. Touchan**)
- 11:30** Lect. 10 Lockdown (**D. Meko**)
- 12:30** Lunch
- 14:00** Lab 5. Continue dating the samples and measuring the samples
- 18:00** General discussion
- 18:30** Before dinner talk by one of the participants (30 min)
- 19:00** Dinner

Saturday 18 August: Lectures, Laboratory, and Excursion

- 8:00** Breakfast
- 9:00** Lect. 11 Introduction to standardization and time-series properties (**D. Meko & R. Touchan**)
- 10:15** Lect. 12 Introduction to ARSTAN (**R. Touchan & D. Meko**)
- 12:30** Lunch
- 14:00** Lab 6. Continue measuring the samples
- 18:00** General discussion
- 18:30** Before dinner talk by one of the participants (30 min)
- 19:00** Dinner

Sunday 19 August: Laboratory and Excursion

- 08:00** Breakfast
- 09:00** Lect. 13 Parameterization of the process-based tree-ring VS-model and its using in dendroecology (**Pr. V. Shishov, I. Tychkov**)
- 12:30** Lunch
- 13:30** Excursion to national museum "Shushenskoe"
- 19:00** Dinner

Monday 20 August: Lectures and Laboratory

- 8:00** Breakfast
- 9:00** Lect. 14 Introduction to dendroclimatology (**R. Touchan**)
- 10:15** Lect. 15 Introduction to dendrohydrology (**D. Meko**)
- 12:30** Lunch
- 14:00** Lab 7. Introduction to Minitab and micro-project and finish measuring and run COFECHA on the dated samples
- 18:00** General discussion
- 18:30** Before dinner talk by one of the participants (30 min)
- 19:00** Dinner

Tuesday 21 August: Lectures and Laboratory

- 8:00** Breakfast
- 9:00** Lect. 16 Signal identification: Response functions (**D. Meko & R. Touchan**)
- 10:15** Lect. 17 Transfer functions – basic ideas (**D. Meko & R. Touchan**)
- 12:30** Lunch
- 14:00** Lab 8. Continue micro-project
- 18:00** General discussion
- 18:30** Before dinner talk by one of the participants (30 min)
- 19:00** Dinner

Wednesday 22 August: Lectures and Laboratory

- 8:00** Breakfast
- 9:00** Continue micro-project
- 12:30** Lunch
- 14:00** Continue micro-project
- 18:00** General discussion
- 18:30** Before dinner talk by one of the participants (30 min)
- 19:00** Dinner

Thursday 23 August: Case study and micro-project

- 8:00** Breakfast
- 9:00** Preparation of participant presentations
- 12:30** Lunch
- 14:00** Participant presentations
- 16:00** Course evaluation and wind-up
- 17:00** End of course (Official meeting, party)

Friday 24 August: Departure day

- 3:00** Departure according to the tickets