

TOLERABLE LIMITS FOR TOTAL ELEMENTS IN SOIL (ON EXAMPLE OF FE)

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Objects for the analysis:

Natural water

Treated waste water

Atmospheric precipitation

Snow cover

Soil

Plant

Animal material



Methods

for the analysis:

Photometry

Potentiometry

Gas chromatography

High-performance liquid chromatography (HPLC)

Atomic absorption (AAS)

ICP-AES





The water



analytical group



Institute of Biology Komi SC UB RAS, Syktyvkar, Russia

The soil-and-plant analytical group



Institute of Biology Komi SC UB RAS, Syktyvkar, Russia

CNHS-O-Analyzer



Institute of Biology Komi SC UB RAS, Syktyvkar, Russia



The spectrometry group



Institute of Biology Komi SC UB RAS, Syktyvkar, Russia

Interlaboratory Comparisons in which the “ECOANALYT” Ecoanalytical Laboratory took part in 2004/2009

The intercomparison test 0418, Norway

The intercomparison test 0519, Norway

The intercomparison test 0620, Norway

The intercomparison test 0721, Norway

The intercomparison test 0822, Norway

The intercomparison test 0923, Norway

The SYKE proficiency test 1/2004, Finland

The SYKE proficiency test 5/2004, Finland

The SYKE proficiency test 6/2006, Finland

The SYKE proficiency test 4/2007, Finland

The SYKE proficiency test 7/2007, Finland

The SYKE proficiency test 6/2008, Finland

The SYKE proficiency test 7/2008, Finland

EPD 2nd Working Ring Test 2005, Italy

EPD 3rd Working Ring Test 2009, Italy

5th FSCC Interlaboratory Comparison 2007, Belgium

6th FSCC Interlaboratory Comparison 2009, Belgium

10th European Needle/Leaf Interlaboratory Comparison Test 2007/2008, Austria

11th European Needle/Leaf Interlaboratory Comparison Test 2008/2009, Austria

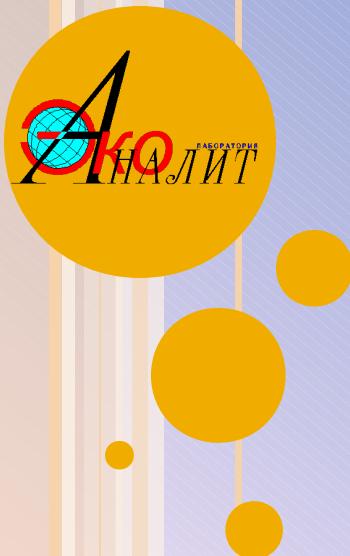


Methods used for the pre-treatment and the determination in Interlaboratory Comparisons

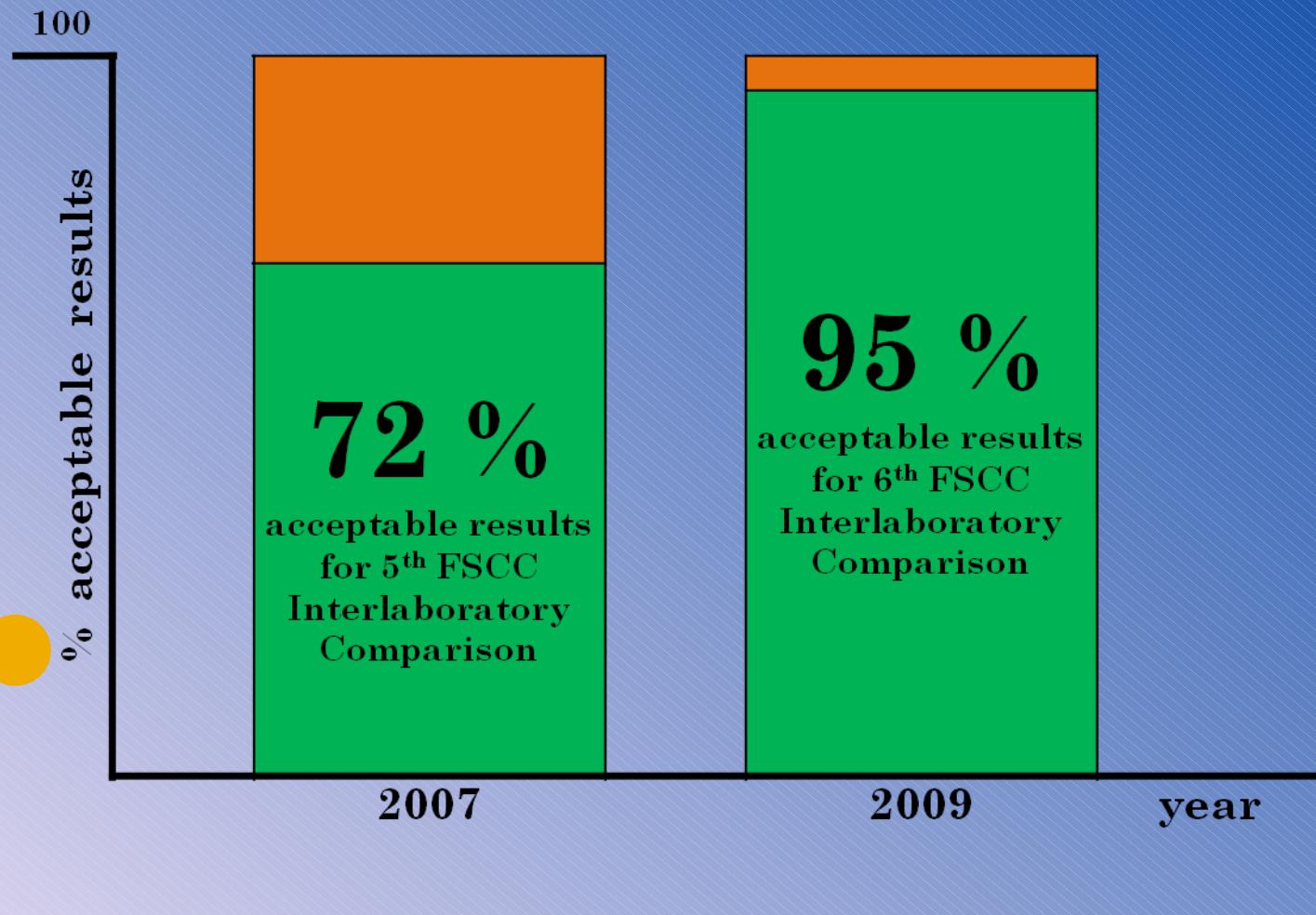
When analyzing **water samples** we mainly apply photometrical methods. We don't use Ion Chromatography (IC) and Flow Injection Analysis (FIA).

When analyzing **plant samples** we use decompositional and analytical methods that are generally the same as the ones described in the Manual - part IV.

The methods used in the Ring-test for **soil samples** (the Manual - part IIIa) essentially differ from those we usually apply for.



“ECOANALYT” Ecoanalytical Laboratory



The DRAFT report of the 6th FSCC Interlaboratory Comparison 2009

Table 5: Tolerable limits for total elements for inter-laboratory comparison and intra-laboratory performance.

Parameter	Observation Range	Level ($\text{mg} \cdot \text{kg}^{-1}$)	Ring Test Tolerable limit (% of mean)
Total	Lower range	≤ 20000	± 35
	Higher range	> 20000	± 5
TotCa	Lower range	≤ 1500	± 20
	Higher range	> 1500	± 15
TotFe	Lower range	≤ 7000	± 20
	Higher range	> 7000	± 5
TotK	Lower range	≤ 7500	± 15
	Higher range	> 7500	± 5
TotMg	Lower range	≤ 1000	± 60
	Higher range	> 1000	± 5
TotMn	Lower range	≤ 200	± 25
	Higher range	> 200	± 5
TotNa	Lower range	≤ 1500	± 20
	Higher range	> 1500	± 5

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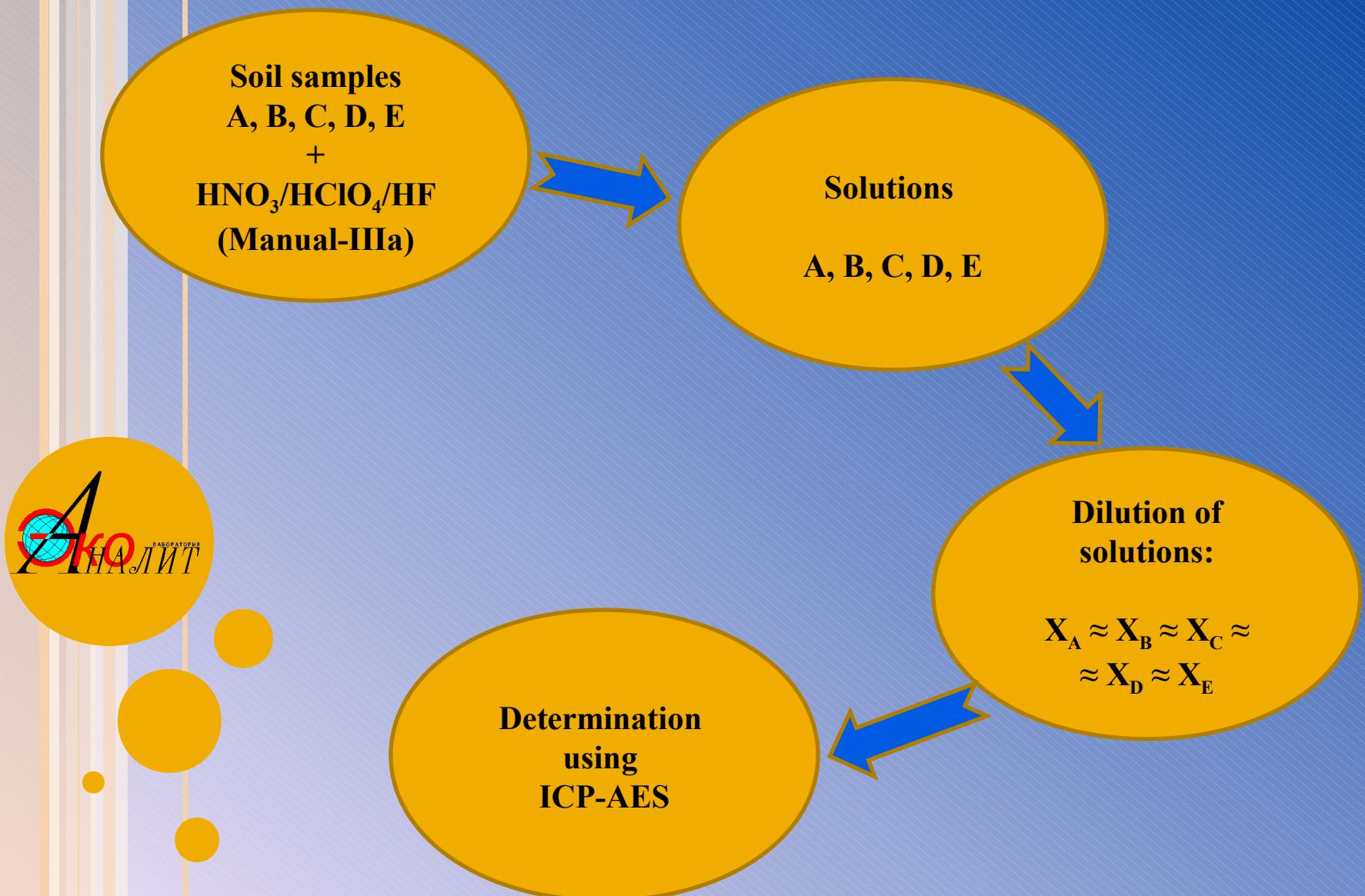
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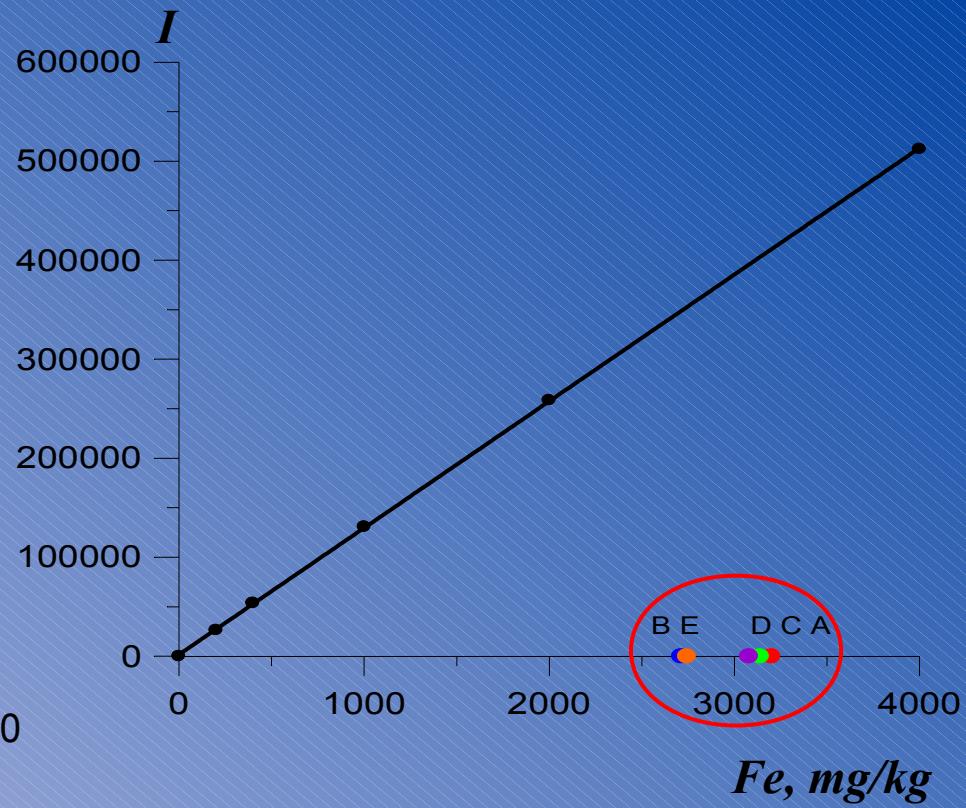
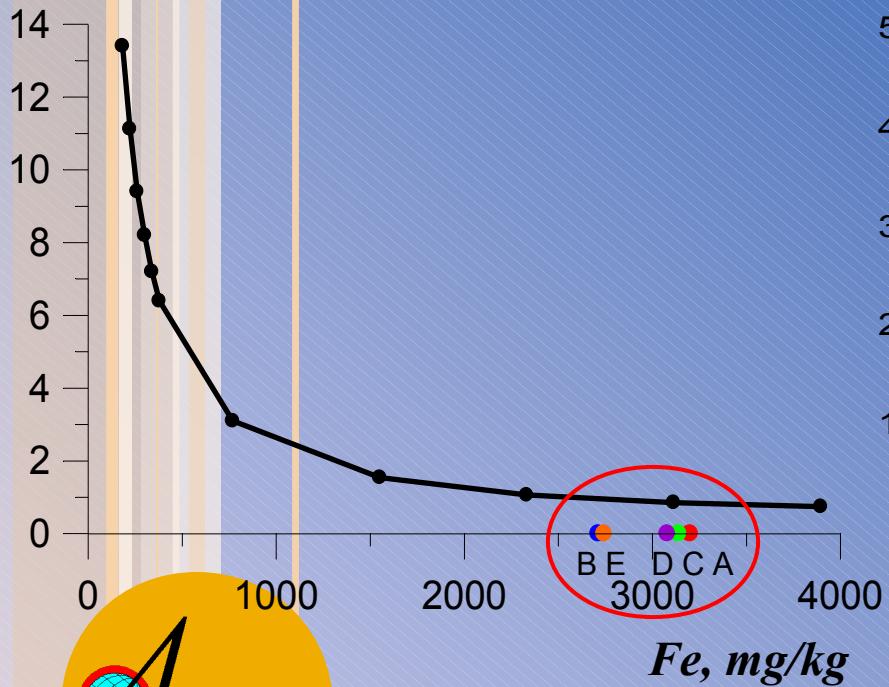
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Calibration error, %



$$Y = Kx; K = 127.9; S(K) = 0.4; R = 0.99998$$

$X_A \approx X_B \approx X_C \approx X_D \approx X_E$
for diluted solutions

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($P=0.95$)

Sample	Total Fe, mg/kg	Error of measuring instrument, %	Double coefficients of variation, %	Tolerable limits, %
A	64025	3	14	14
C	31403	3	5	6
D	15417	3	15	15
E	2744	3	3	4
B	2713	3	7	8



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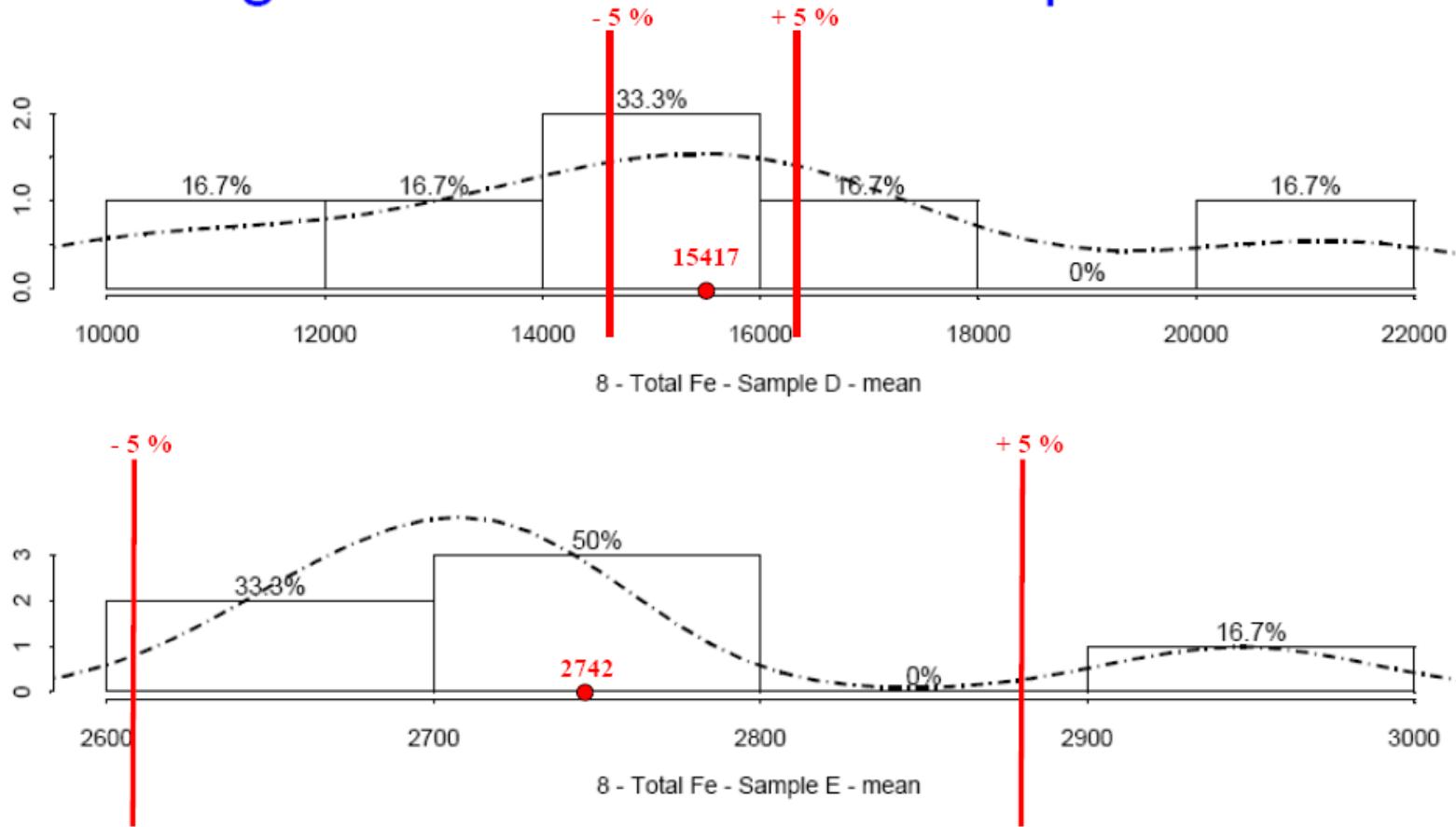
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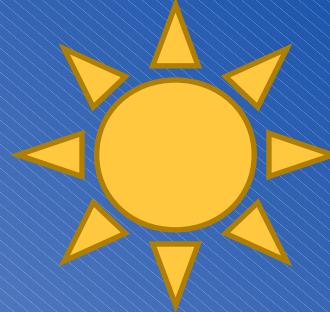
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Histogram of the means of samples D and E





*Thank you
for your attention!*

