

SESSION

Online Experimentation: Emerging Technologies and Internet of Things (IoT)

Smart Sensors in Meteorological Education



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New IT in Education...



The Russian State Hydrometeorological University (RSHU) was established in 1930. RSHU has the status of the Regional Meteorological Training Center of WMO.

RSHU

EDUCATION

- BSc
- MSc
- PhD
- Doctor of Science

RESEARCH

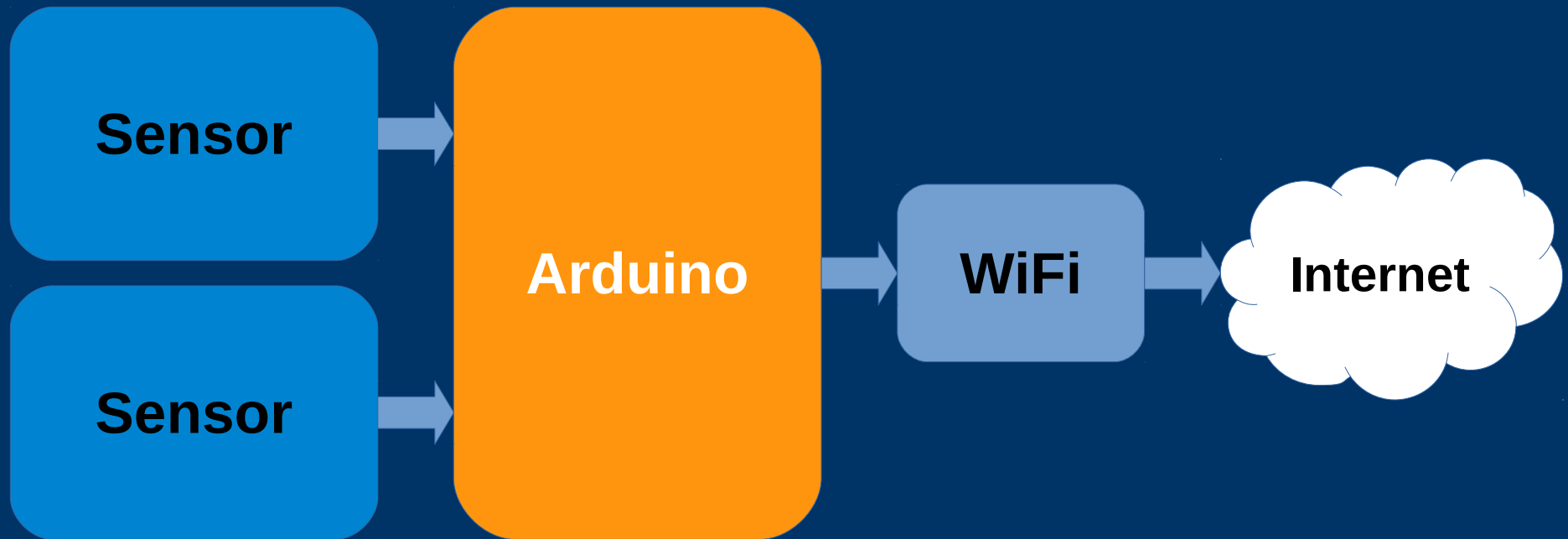
- Weather Forecast
- Climate Changes
- Atmosphere-Ocean Interactions
- Remote Sensing

We study environment...



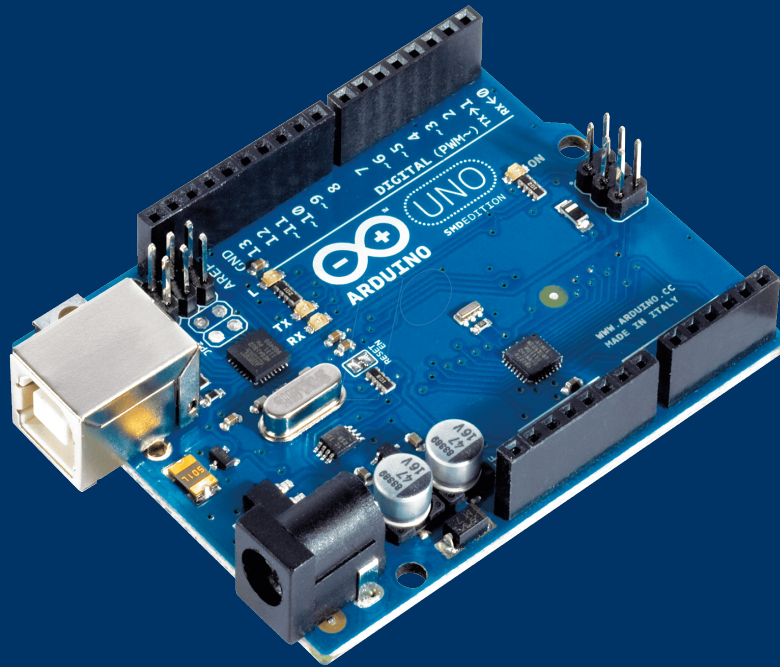
Internet of things (IoT) technologies are used in teaching students methods of meteorological measurements

Arduino Technology



The technology allows to create prototypes of new devices with minimal loses of time

Arduino Board



Arduino IDE

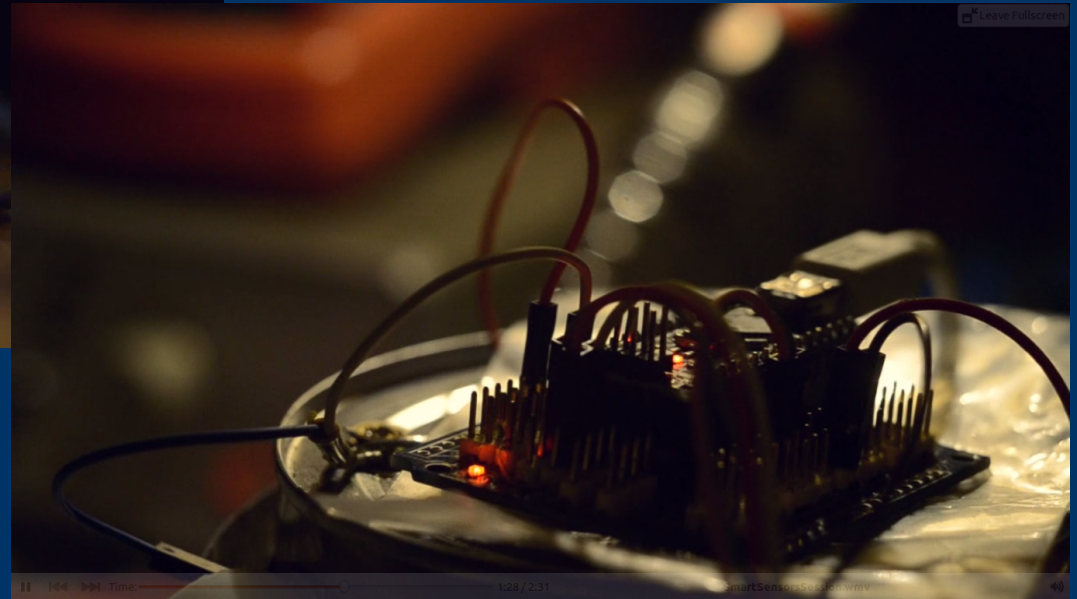
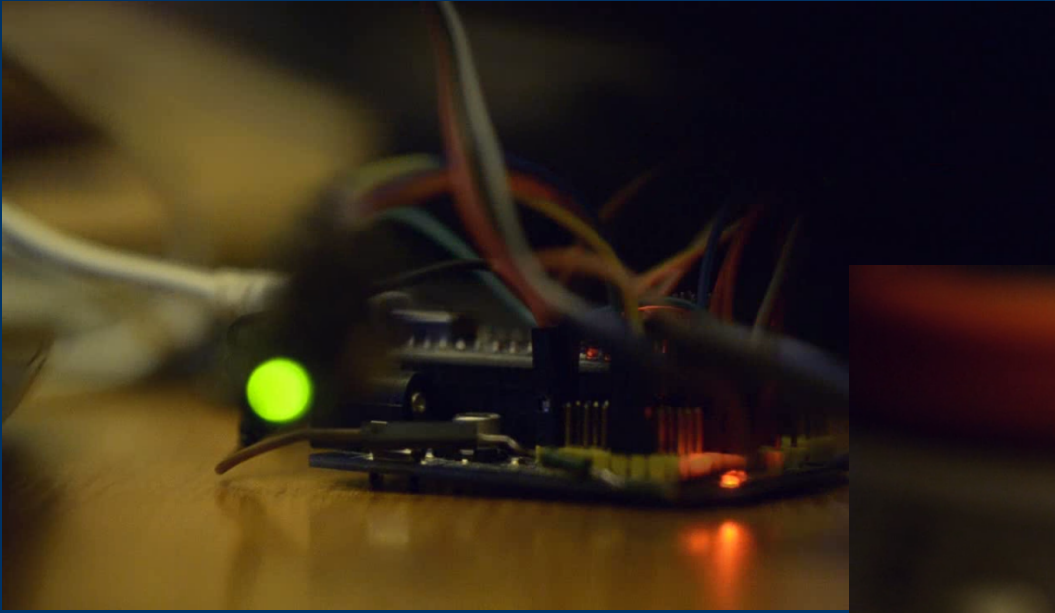
```
Arduino IDE - Blink | Arduino 1.0
File Edit Sketch Tools Help
[Icons]
Blink
/*
 * Blink
 * Turns on an LED on for one second, then off for one second, repeatedly.
 *
 * This example code is in the public domain.
 */

void setup() {
  // initialize the digital pin as an output.
  // Pin 13 has an LED connected on most Arduino boards:
  pinMode(13, OUTPUT);
}

void loop() {
  digitalWrite(13, HIGH); // set the LED on
  delay(1000);           // wait for a second
  digitalWrite(13, LOW); // set the LED off
  delay(1000);          // wait for a second
}

1 Arduino Uno on /dev/ttyACM1
```

All sensors are connected to the board.
Primary processing software is created
with the help of the Arduino IDE



Students love to develop new devices!



Educational Projects

- Development of the device for measurement of aerosol optical thickness
- Development of the balloon equipment for weather measurement
- Development airmobile gas-aerosol analyzer
- Remote sensing of the ionosphere by GNSS to determine the earthquake precursors
- Development of tools for monitoring the electrical parameters of the atmosphere



Thank you for your attention!