



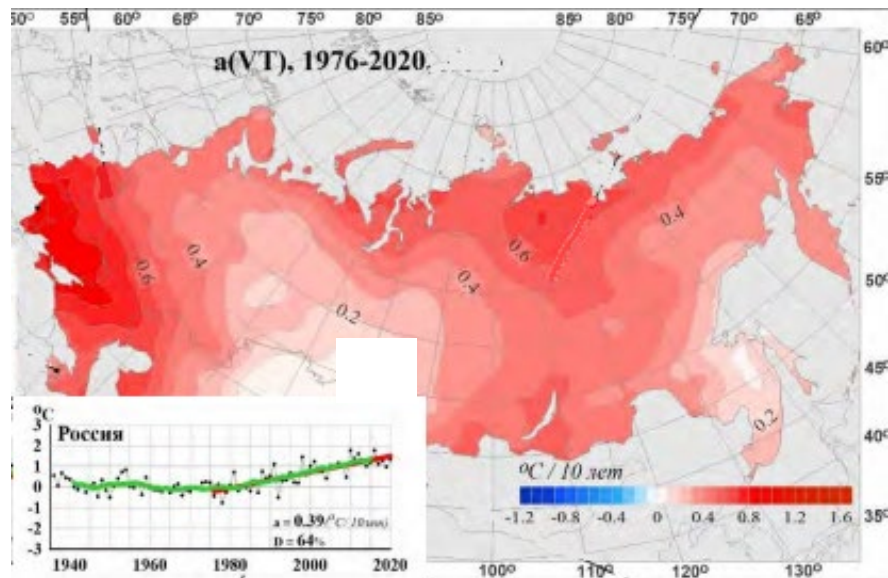
ACF

Arctic Climate Forum

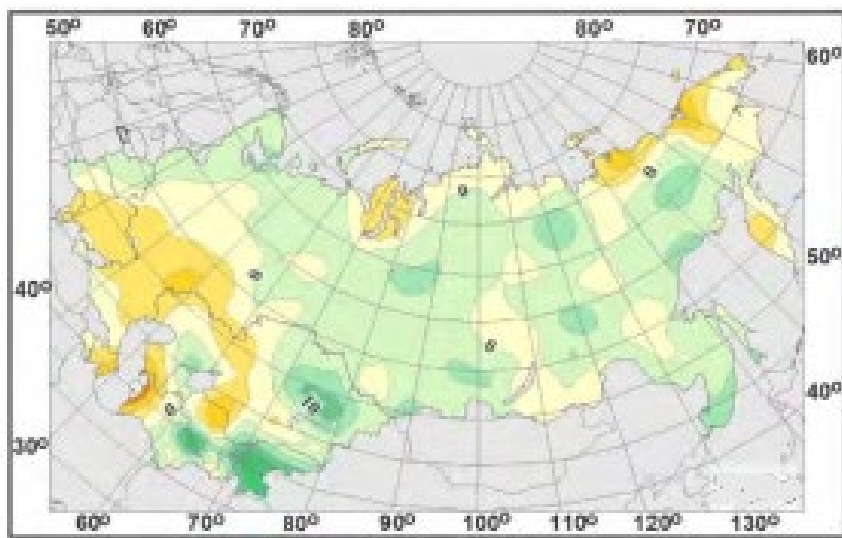
Wildfire analysis for the past season

Valentina Khan
Svetlana Emelina
Rick Thoman

Long-term tendencies of air temperature and precipitation in Russia 1976-2020



Distribution of linear trend coefficients of summer air temperatures 1976–2020 ($^{\circ}\text{C} / 10$ years)



Distribution of linear trend coefficients of summer precipitation 1976–2020 (% / 10 years)

Seasonal Summary: Summer 2021

Temperature

Observations above (+) and below (-) normal (1961-1990)

Western Siberia	+1.2°C	11	Warmest year was 2016 (3.6°C)	Coldest year was 1968 (-1.6°C)
Eastern Siberia	+2.9°C	1	Warmest year was 2019, 2021 (+2,9)	Coldest year was 1989 (-1,2)
Chukchi & Bering	+1.1°C	10	Warmest year was 2007 (2,9)	Coldest year was 1949 (-1,3)

Precipitation

Observations above (+) and below (-) normal (1961-1990)

Western Siberia	+0.7	Wettest year was 2002 (+22.6%)	Driest year was 1946 (-27.6 %)
Eastern Siberia	-9.6%	Wettest year was 1988 (+25,2%)	Driest year as 1967 (-21.6%)
Chukchi & Bering	-6.9%	Wettest year was 1954 (+39,6%)	Driest year was 1982 (-39.8%)

Analysis of a forest fire danger by the weather conditions on the territory of Russia in summer 2021

In the Hydrometeorological Center of Russia, every year during the warm season (April - October), calculations of the fire hazard indicator in forests are carried out according to weather conditions [Khan 2012, Vilfand et al. 2019, 2020]. This information is operationally distributed to the governing bodies: Roshydromet, the Government of the Russian Federation, the Ministry of Emergency Situations, Rosleskhoz, etc. The degree of fire risk is set in accordance with the classification of fire hazard according to Nesterov scale.

1st class - no fire hazard

2nd - low risk of fire hazard

3rd – medium risk of fire hazard

4th – high risk of fire hazard

5th class –risk of extreme fire hazard

Comparison of fire danger situation in June 2021 with relevant data for previous years

June
2000-2020

Climate change is manifested not only in an increase in average seasonal temperatures, but also in the shift of forest fires from the southern part of the Russia to the Arctic zone

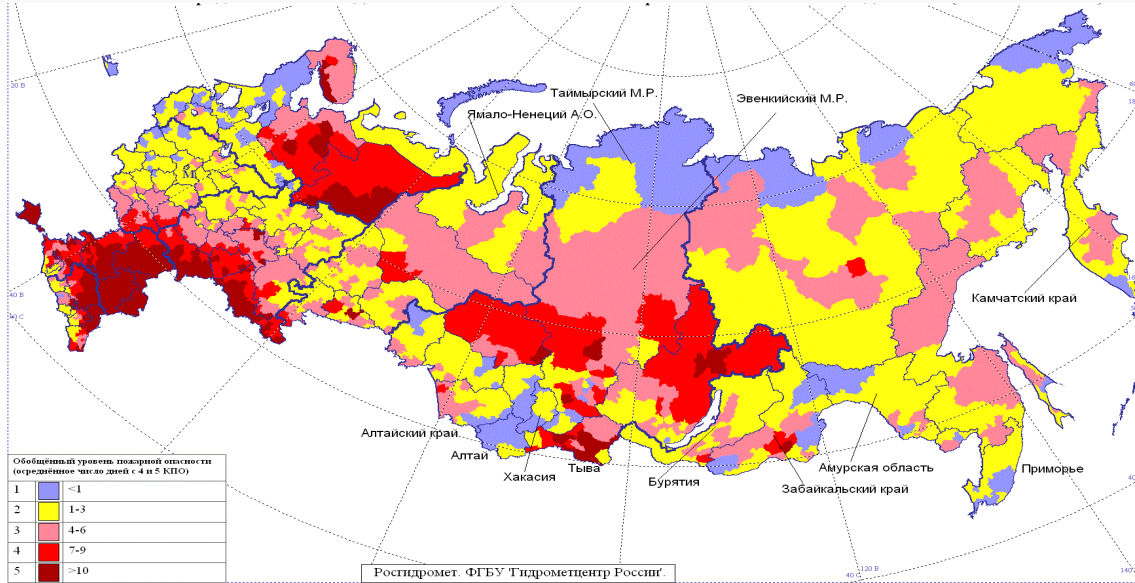
June
2021



Number of days 4 and 5
fire danger class

Comparison of fire danger situation in July 2021 with relevant data for previous years

July
2000-2020



Number of days 4 and 5
fire danger class

July
2021



Comparison of fire danger situation in August 2021 with relevant data for previous years



August
2000-2020

Abnormally hot and dry weather conditions have developed related to stationary anticyclone in Siberia, contributing to the emergence and spread of wildfires.

August
2021

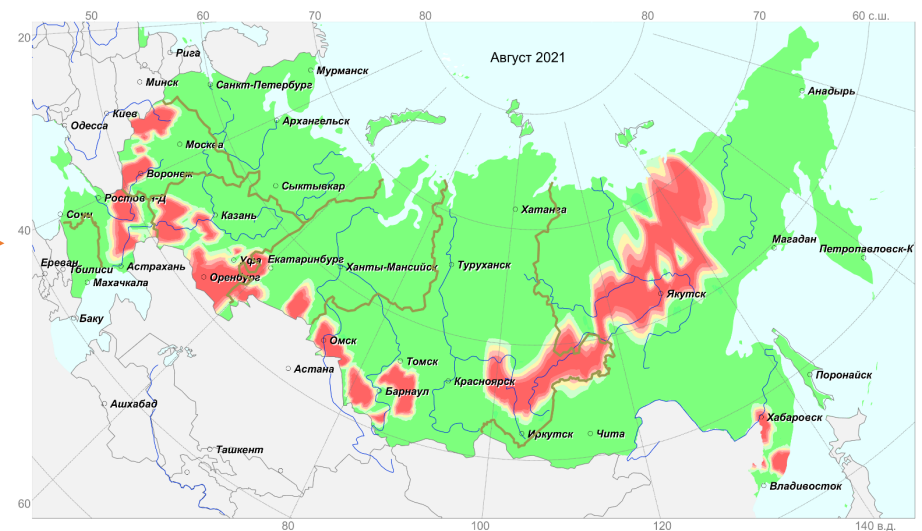
Number of days 4 and 5
fire danger class

Fire danger forecast from Forestry Agency August 2021



Fire danger forecast at monthly and seasonal issued in «Avialesohrana» based on multivariate correlation analysis using information about the current weather conditions, fire danger weather forecast from the Hydrometeorological Center of Russia, vegetation state, turf anthropogenic factors.

Fire danger weather forecast From Hydrometcentre of Russia August 2021



High Fire Danger



DEVELOPMENT OF FOREST FIRE SITUATION THE REPUBLIC OF SAKHA (YAKUTIA)



THE SITUATION WITH NATURAL FIRES IS REPEATED IN THE TERRITORY OF THE REPUBLIC FROM YEAR TO YEAR: FIRE IN HARD AND REMOTE AREAS SPREAD OVER HUGE AREAS



REGISTERED 1,695 FIRES FOR 8.0 MILLION HECTARES



FOREST FIRE IN THE BAS-KYUEL LOCATION BY FIRE DESTROYED 32 BUILDINGS, OF THEM 20 RESIDENTIAL BUILDINGS AND 12 NON-RESIDENTIAL BUILDINGS

463 PERSONS WORK, 72 UNITS. EQUIPMENT, FROM THE EMERCOM OF RUSSIA - 46 PERSONS, 9 UNITS OF TECHNIQUES



FOR STABILIZING THE SITUATION IN YAKUTIA FOR MORE THAN 2 MONTHS, A LARGE GROUP OF PARCHUTISERS FROM "AVIALESOOHRANA" WORKED AT FIRE PLACES



FIRE EXTINGUISHING WORKS WERE ALSO CONDUCTED USING THE METHOD OF ARTIFICIAL PRECIPITATION ON AN-26 "CYCLONE" AIRCRAFT

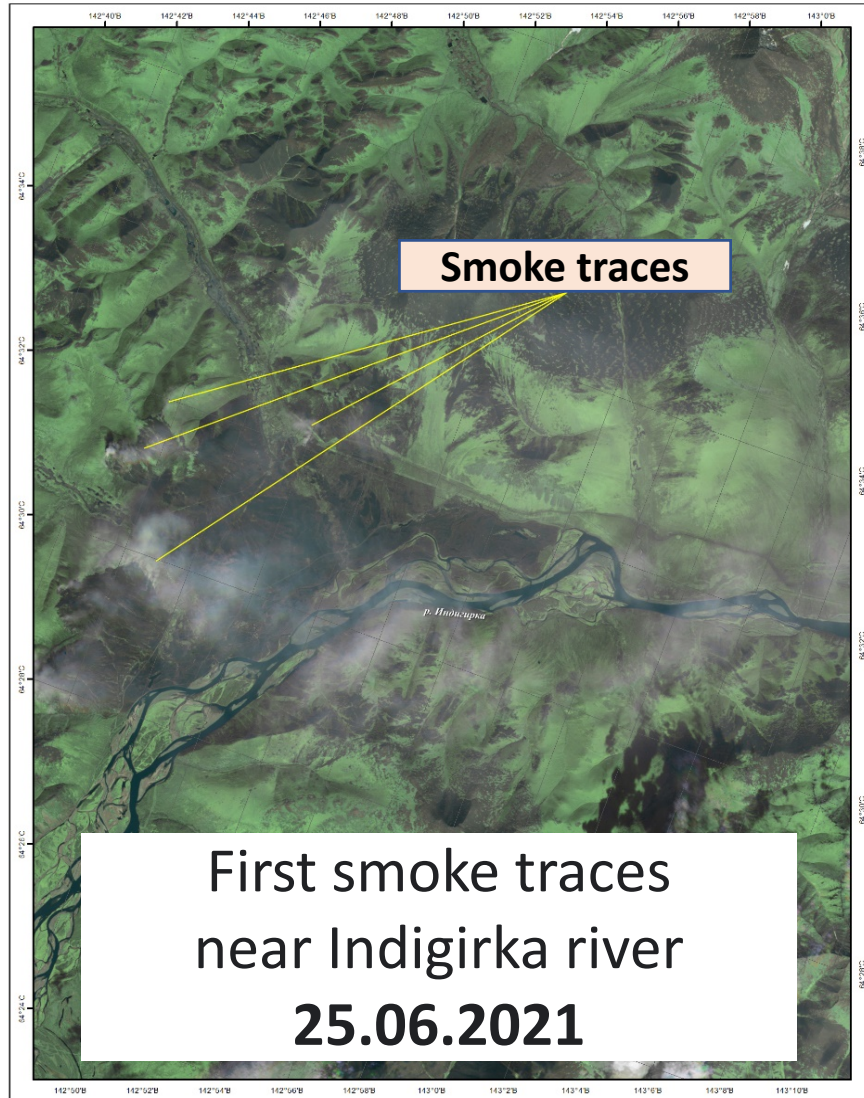
Satellite data State Research Center for Space Hydrometeorology "Planeta"



ФЕДЕРАЛЬНАЯ СЛУЖБА ПО ГИДРОМЕТЕОРОЛОГИИ И МОНИТОРИНГУ ОКРУЖАЮЩЕЙ СРЕДЫ
ФГБУ "НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР КОСМИЧЕСКОЙ ГИДРОМЕТЕОРОЛОГИИ "ПЛАНЕТА"
ДАЛЬНЕВОСТОЧНЫЙ ЦЕНТР



ФГБУ "НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР КОСМИЧЕСКОЙ ГИДРОМЕТЕОРОЛОГИИ "ПЛАНЕТА"
ДАЛЬНЕВОСТОЧНЫЙ ЦЕНТР

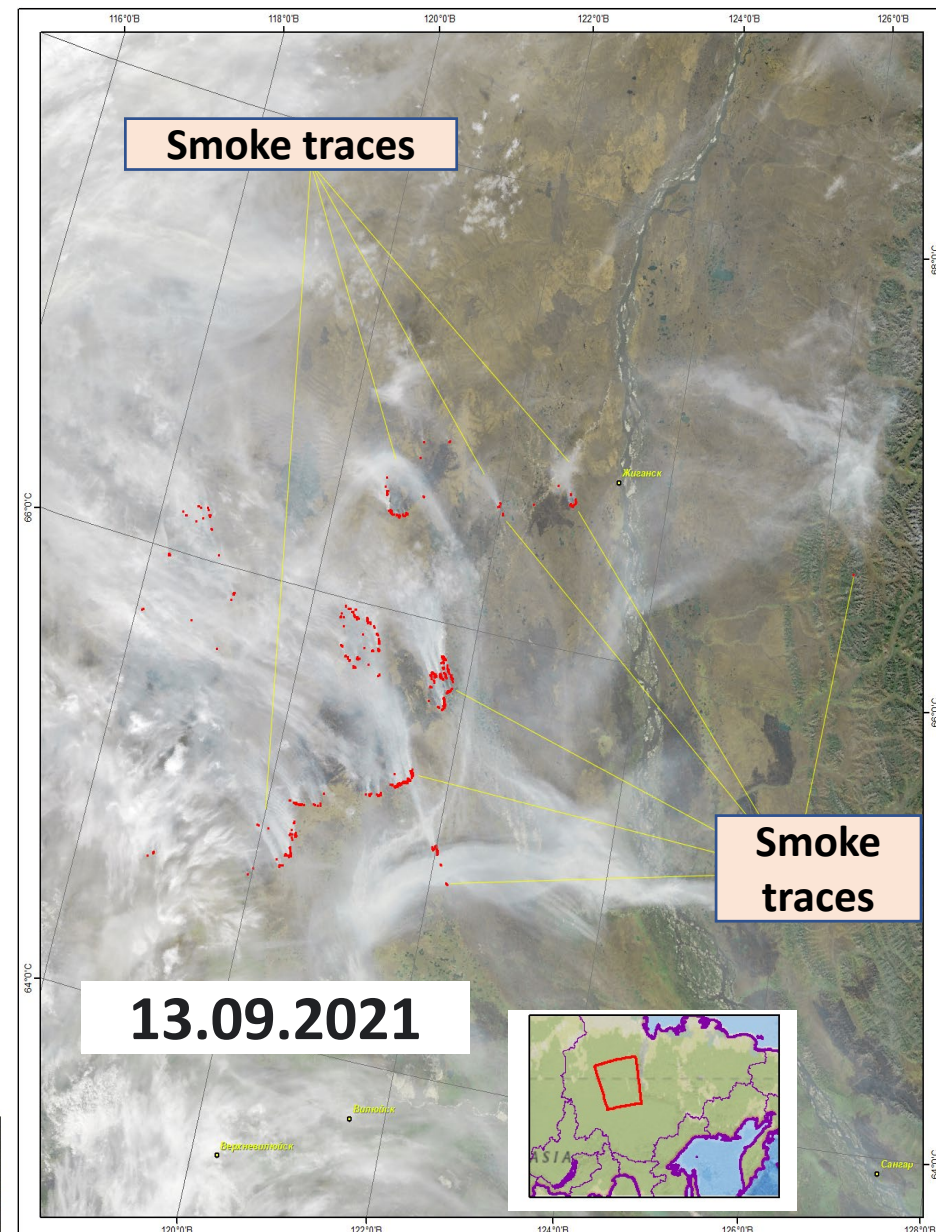


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Дальневосточный центр
ФГБУ "НИЦ "Планета"
Россия, 680000, г. Хабаровск
ул. Ленина, д. 18
тел.: (8-4212) 21-43-11
факс: (8-4212) 21-40-07
e-mail: dvrcpod@mail.ru
http://www.dvrcpod.ru



КА Канопус-В-ИКМСС, виток 21904, разрешение 11 м
Спектральные каналы R: 0.750-0.860 мкм; G: 0.690-0.720 мкм; B: 0.630-0.690 мкм
26.06.2021 00:48 UTC

Мониторинг пожарной обстановки
Республика Саха (Якутия)



The Impacts of Forest Fires

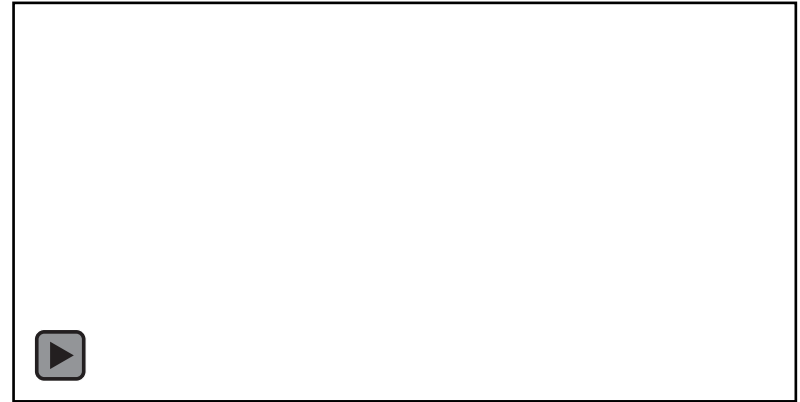
Yakutia is one of the most fire danger regions of Russia. The total area of forests in the region is 256.1 million hectares (83.4% of the territory of the subject).



The emergency regime was introduced in Yakutia in June. Yakutsk, the capital of the republic, where one third of the total population lives, was covered in smoke for a month. On August 6-12, the concentration of pollutants in the air exceeded the maximum permissible norm by 5-21 times. During this period, 727 people complained of deteriorating health due to smoke, 40 were hospitalized.

Flights were delayed and ferry services on the Lena River were suspended.

<http://14.rospotrebnadzor.ru>



Smoke traces

Smoke traces

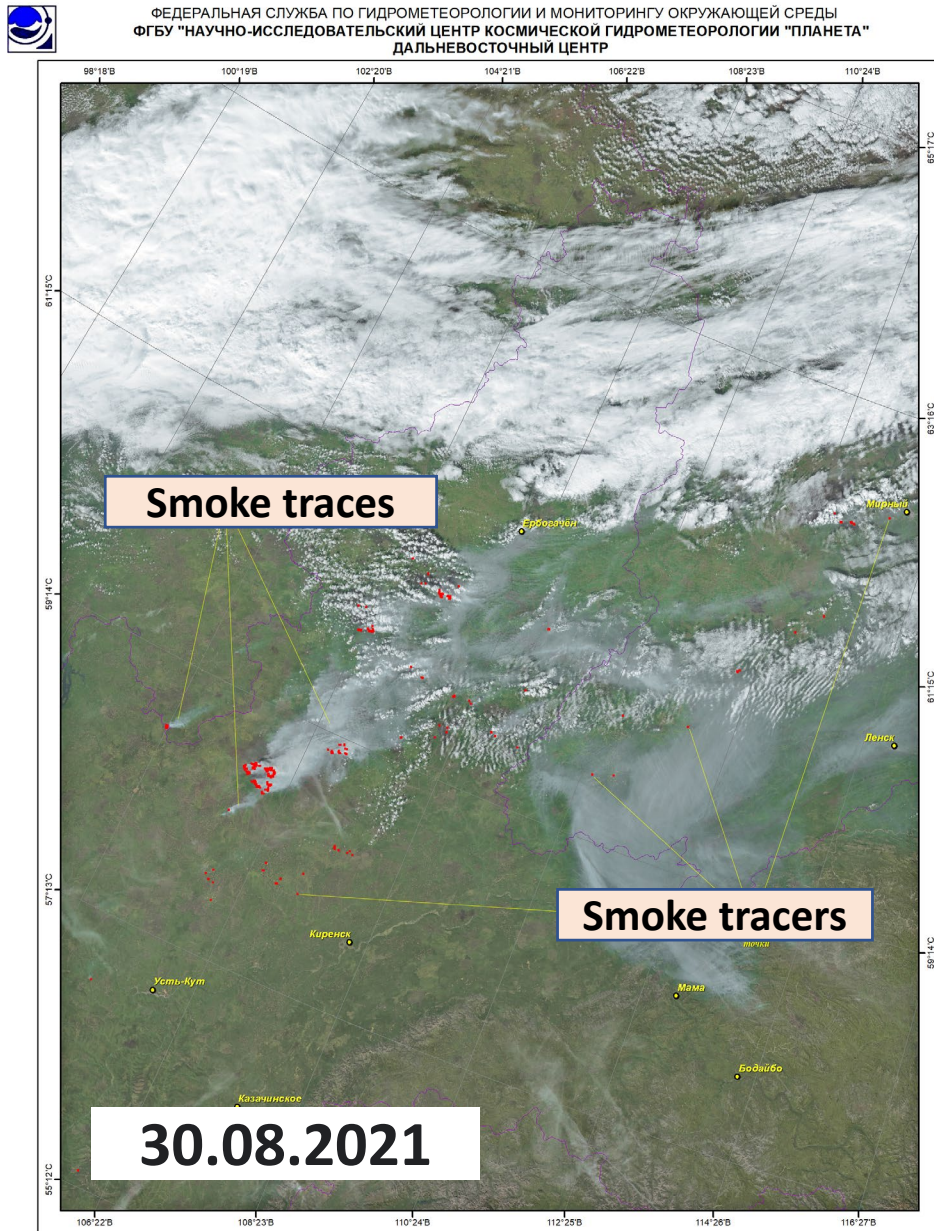
01.08.2021

A map showing the Sakha Republic (Yakutia) in Russia, highlighted with a red rectangle. The map includes labels for 'Sakha' and 'ASA' (likely referring to the Altai-Sayan Alatau mountains). The map also shows the borders of neighboring regions and the Arctic Ocean to the north.

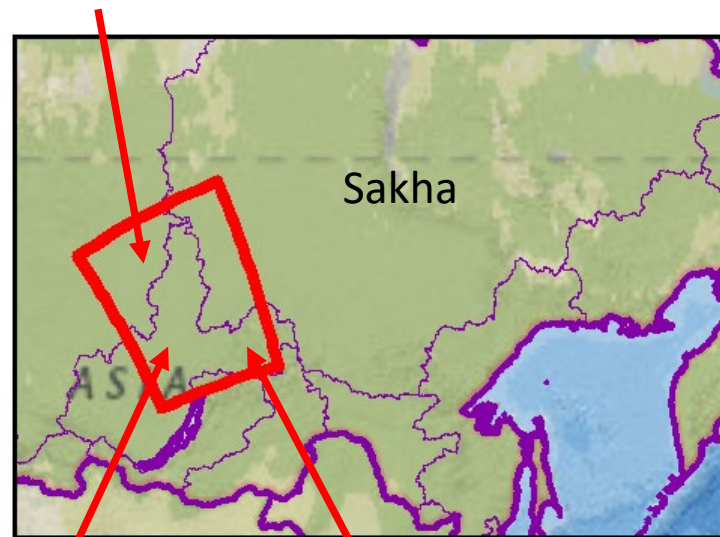
Irkutsk Region

Buryatia

Traces of wildfires in the Krasnoyarsk Territory, in the Irkutsk Region and Buryatia



Krasnoyarsk Territory



Irkutsk Region

Buryatia

The Impacts of Forest Fires

~ 1700 fire spots on total area 8 millions hectares



**Vilyui river
September
2020**



**Vilyui river
September
2021**

2021 North American Arctic Wildfire

Typical Season

- Burning largely confined to June & July
- Over by late August
- Total area burned well below median

