

Wildfire GPT



Hi there! I'm WildfireGPT, your friendly wildfire risk consultant. With access to comprehensive wildfire datasets, I'm here to help you understand and prepare for potential risks in your area.

To provide the most relevant information, I'll start by working through a checklist of questions about your background and concerns prior to our consultation session. Your responses will help me tailor my recommendations to your unique situation. If you're unsure about any question, feel free to say "I don't know."

Once I have a clear understanding of your needs, I'll summarize our discussion and create a plan to address your concerns. This will include the datasets we'll analyze and the types of recommendations I can provide.

When you're happy with the plan, we'll proceed according to the agreed-upon steps. Feel free to ask questions at any point in the process.

I'm looking forward to working with you to help you better understand and prepare for wildfire risks. Let's get started with our first question: What is your professional background?



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I'm a public safety manager



Thank you for sharing that. What are your primary concerns or questions about wildfires?



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Ask me anything?





We had a high intensity fire, which areas should we be concerned about?



Understood. Could you specify the area of concern for assessing wildfire risks? If you know the latitude and longitude, please provide them. If not, just describe the area and I can help with the coordinates.



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Sangre De Cristo Mountains



For the Sangre De Cristo Mountains, I propose using the coordinates latitude 36.5569° N and longitude -105.4164° W. Let me verify this location on a map for you to confirm. Please hold on.

Please confirm the location by clicking the 'Confirm Location' button on the map provided. Is this the correct area for assessing wildfire risks?



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The location has been confirmed: latitude 35.85343961959182, longitude -105.68298339843751.



Great, thank you for confirming the location.

Next, could you specify the time frame for which you are interested in assessing wildfire risks and implementing strategies? This could include short-term (1-10 years), medium-term (10-30 years), or long-term (30-80+ years) considerations.



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short-term (1-10 years)



Thank you for specifying the time frame. Lastly, what specific aspects of wildfire risks are you interested in exploring? If you're unsure, I can provide examples to help you decide.

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We are interested in post-wildfire impacts to public safety and the environment



Thank you for providing all the necessary details. Here's a summary of the information you've provided:

- **Profession:** Public safety manager
- **Concern:** Concerned about areas that should be focused on after a high-intensity fire.
- **Location:** Sangre De Cristo Mountains, confirmed at latitude 35.8534, longitude -105.6830.
- **Time:** Short-term (1-10 years), focusing on immediate mitigation strategies.
- **Scope:** Interested in exploring post-wildfire impacts to public safety and the environment.

Please confirm if all these details are correct before I proceed with updating our records.

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Looks good



I have updated our records with the information you provided. I have a few more follow-up questions about the scope of this session to better tailor our consultation to your needs. Are you ready to proceed with these questions?



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Sure



Great! Let's start with the emergency services aspect. Could you tell me about the current capabilities and response times of emergency services in the Sangre De Cristo Mountains? If you're unsure, we can include this in the scope of today's session to explore further.



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Let's include this



Understood, we'll include the assessment of emergency services capabilities and response times in our session.

Next, has there been an updated community engagement or education program focusing on wildfire preparedness and evacuation procedures recently? If you're unsure, we can also include this in our session's scope.



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Let's include this as well



Alright, we will also include the evaluation of community engagement and education programs on wildfire preparedness and evacuation procedures in our session.

Finally, could you tell me about any specific environmental restoration initiatives or partnerships that are currently in place or planned for the immediate and short-term recovery phases? If this information isn't readily available, we can explore it together today.



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They are working with US Army Corps engineers on erosion and flooding mitigations



Thank you for that information. I will include the partnership with the US Army Corps of Engineers for erosion and flooding mitigations in our discussion.

Here's the updated scope for our session today:

- **Emergency Services Readiness:** Assess the current capabilities and response times of emergency services.
- **Community Preparedness Programs:** Evaluate recent updates in community engagement or education programs focusing on wildfire preparedness and evacuation procedures.
- **Environmental Restoration Initiatives:** Discuss initiatives with the US Army Corps of Engineers on erosion and flooding mitigations.

Please confirm if this scope aligns with your expectations and if there's anything else you'd like to add or modify.



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Looks good



While I am working diligently creating a comprehensive plan, I wanted to touch base and let you know that I can leverage three powerful datasets that each offer unique insights into wildfire risks within a 36km radius of the area of interest we discussed earlier:

- Fire Weather Index (FWI) from [ClimRR](#) allows us to assess potential trends in fire danger from the historical period (1995-2004) through the mid-century (2045-2054) and up to the end of the century (2085-2094). This dataset is ideal if you're interested in understanding how fire risks may evolve over time.
- Long term fire history records from [International Multiproxy Paleofire Database \(IMPD\)](#), specifically the metadata from the North American Tree-ring Fire Scar Synthesis (NAFSS) provides a rich dataset including scientific studies derived from tree-ring records across North America, capturing centuries of wildfire occurrences. This dataset can be instrumental in analyzing wildfire risk by providing historical context and identifying patterns or cycles in wildfire activity in the long term. If analyzing long-term wildfire trends is a priority for you, this dataset is a fantastic resource.
- Recent fire incident data reported to the [IRWIN system](#): Wildland Fire Interagency Geospatial Services (WFIGS) Group wildfire incidents record allows you to retrieve yearly and monthly wildfire incident counts between 2015 and 2023. This dataset is perfect if you want to focus on recent fire incidents in your area.

Currently, these are the datasets I can access. If I mistakenly suggest analyzing types of data that are beyond my current access, please kindly point them out to me so I can adjust our plan accordingly.

In addition to these datasets, the related academic papers are compiled by the Argonne National Laboratory's [Community and Infrastructure Adaptation to Climate Change \(CIACC\) tool](#). For each retrieval, I can extract abstracts from 3 relevant published papers within the corpus and provide you with a summary of the findings.

I am currently working on creating a comprehensive, personalized wildfire risk analysis plan for you. As I work on your plan, I kindly ask for your patience. Please refrain from typing anything until I have shared the completed plan with you for your review ...

Once I have completed the plan, I will share it with you for your feedback. At that time, please let me know if you have any specific preferences or areas of focus you'd like me to prioritize in future revisions or updates to the plan.



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Here's the plan to address your concerns regarding the post-wildfire impacts to public safety and the environment in the Sangre De Cristo Mountains:

Step 1: Analyze Recent Fire Incident Data

- I will analyze the recent fire incident data from the Wildland Fire Interagency Geospatial Services Group to assess the frequency, intensity, and locations of recent wildfires in your area. This will help us identify specific areas that have been affected by high-intensity fires and require immediate attention.

Step 2: Review Fire Weather Index (FWI)

- I will examine the Fire Weather Index data to understand the current fire risk and predict potential future fire behavior. This analysis will assist in preparing effective response strategies and enhancing emergency services readiness based on weather conditions that influence fire risks.

Step 3: Conduct Literature Search

- I will search for scientific literature on effective post-wildfire recovery strategies, focusing on public safety and environmental restoration. This includes reviewing studies on community preparedness programs, emergency response effectiveness, and environmental mitigation techniques like erosion and flooding controls.

Step 4: Formulate Recommendations

- Based on the analysis of recent fire incidents, FWI data, and findings from the literature search, I will provide recommendations. These will focus on improving emergency services, updating community preparedness programs, and implementing environmental restoration initiatives with the US Army Corps of Engineers.

Step 5: Final Review and Feedback

- After presenting the findings and recommendations, I will seek your feedback to ensure that the strategies align with your expectations and the specific needs of the Sangre De Cristo

Mountains community. We can adjust the approach based on your input to better address the concerns.

Do you have any questions about this plan, or is there any other dataset or information you would like to include?



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Looks good



While I am preparing the analysis, I'd like to let you know that I can also report some census data. Specifically, I can analyze the following demographic information reported at the census block level within a 36 km radius of the location of interest:

- Total population
- Number of Housing Units
- Number of People Below Poverty Level

If you need to assess the potential impact of a wildfire on the local community, you can ask me to provide this demographic information by asking questions like: "who will be affected by the wildfire?"

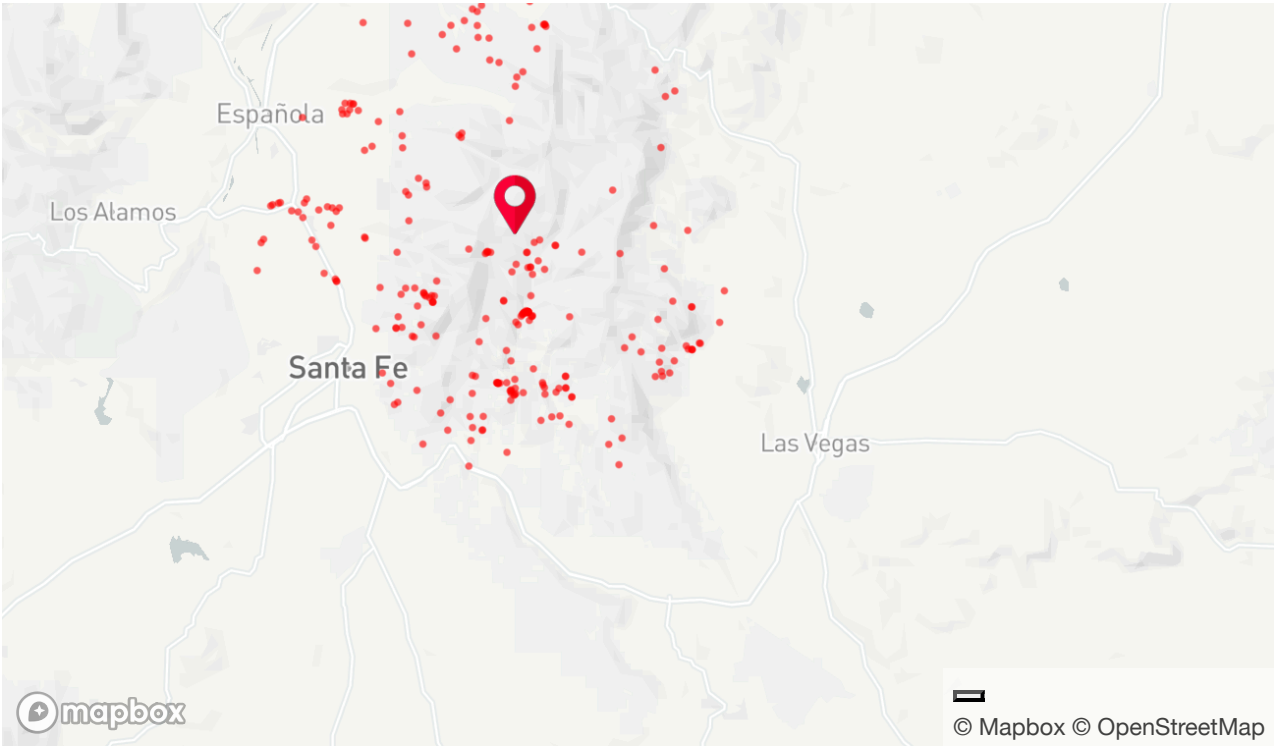


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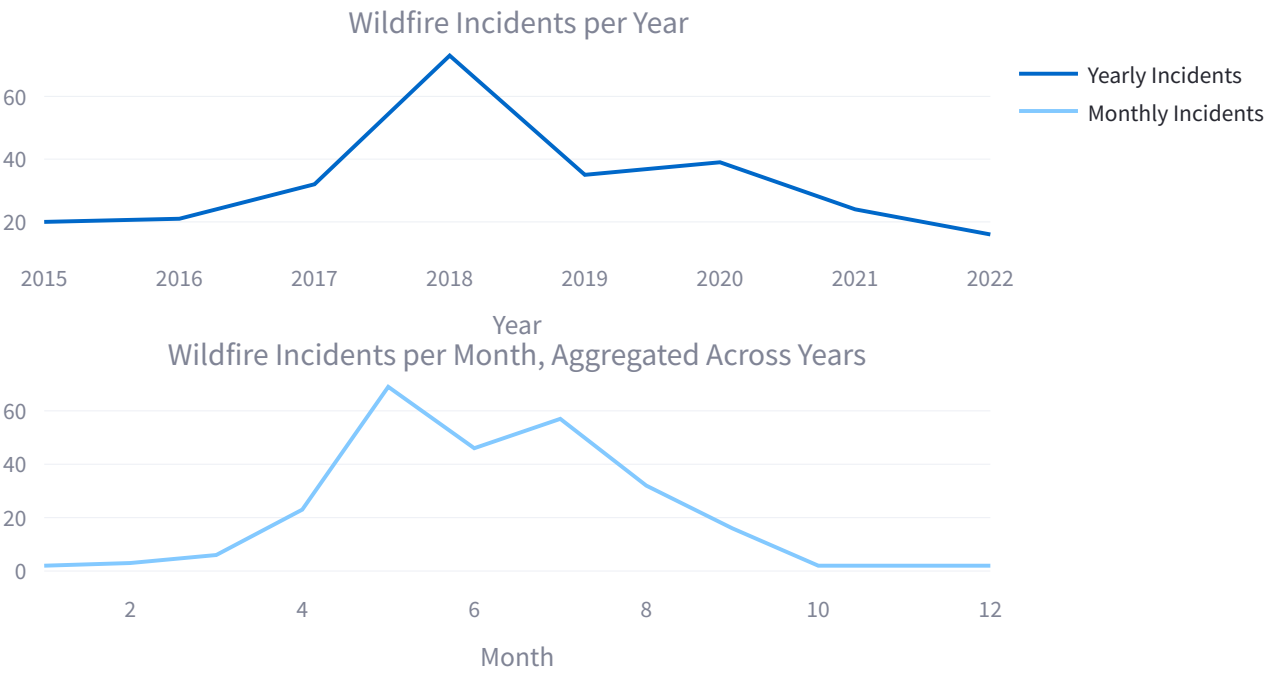


The Fire Incident Records (shown in red dots) within 36 km of the location (lat: 35.8534, lon: -105.683)





Wildfire Incidents within 36 km of the Location (lat: 35.8534, lon: -105.683)



The wildfire incident data from 2015 to 2022 in the Sangre De Cristo Mountains indicates a notable variability in annual wildfire occurrences, with a peak in 2018 (73 incidents). The data suggests an elevated fire risk, particularly in the late spring and early summer months (May to July), which is crucial for planning mitigation strategies. This trend underscores the importance of enhancing community preparedness and emergency response capabilities in these critical

periods. The decrease in incidents in 2022 could indicate effective mitigation or variability in weather conditions but requires continuous monitoring and adaptation of strategies.

For further details, you can access the data source [here](#).

Would you like to discuss any specific concerns based on these trends, or shall we proceed to the next step of analyzing the Fire Weather Index data?



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Let's proceed to the next step



Fire Weather Index (FWI) Data for Location (lat: 35.8534, lon: -105.683) within a 36 km radius, shown at a grid cell level.

Select Season

spring ▼

Select Period

Hist ▼

Display Map

FWI Class	FWI Values in Class
Low	0-9 FWI
Medium	9-21 FWI
High	21-34 FWI
Very High	34-39 FWI
Extreme	39-53 FWI
Very Extreme	Above 53 FWI

Fire Weather Index (FWI) Data for Location (lat: 35.8534, lon: -105.683) with standard error

Category	Spring	Summer	Autumn	Winter
Historical(1995 - 2004)	6.5 (se: ± 3.5) Low	12.34 (se: ± 6.13) Medium	11.65 (se: ± 4.9) Medium	2.5 (se: ± 1.63) Low
Mid-Century(2045 - 2054)	9.17 (se: ± 4.05) Medium	13.95 (se: ± 5.85) Medium	10.21 (se: ± 4.07) Medium	3.51 (se: ± 2.02) Low
End-of-Century(2085 - 2094)	13.55 (se: ± 5.28) Medium	14.99 (se: ± 6.42) Medium	13.09 (se: ± 4.86) Medium	5.47 (se: ± 2.53) Low

The Fire Weather Index (FWI) data for the Sangre De Cristo Mountains shows a trend of increasing wildfire risk over the coming decades. Historically, the FWI during spring and summer was in the low to medium range, but projections indicate a shift towards higher medium values by the end of the century. Notably, the spring FWI is expected to more than double from its historical average, indicating a significant increase in fire risk during this season.

These trends suggest that future wildfire management strategies should focus on enhancing preparedness during these critical months. Increasing community engagement and improving emergency response capabilities will be essential to mitigate the higher fire risks anticipated. This data is crucial for planning long-term public safety and environmental protection measures in the region.

For more details, you can visit the Climate Risk & Resilience Portal [here](#).

Would you like to discuss any specific measures based on these projections, or should we proceed to the next step of conducting a literature search on effective post-wildfire recovery strategies?



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▼



Let's move on to literature search



In addressing the challenges of post-wildfire recovery in mountainous regions, several studies offer valuable insights into effective strategies that focus on both public safety and environmental restoration. Jacobs et al. (2003) provide a comprehensive examination of the Alpine Fires, highlighting the critical need for rapid identification of at-risk values, community consultation, and prioritized management responses to stabilize and rehabilitate affected areas. This approach underscores the importance of immediate and structured recovery efforts to safeguard public lands and support the tourism industry (Jacobs et al., 2003).

Beschta et al. (2004) discuss the ecological impacts of common postfire management practices in the western United States, advocating for measures that preserve large trees and rehabilitate firelines and roads. They caution against practices that may impede ecological recovery, such as seeding exotic species or extensive logging, emphasizing the need for management that aligns with long-term ecosystem health (Beschta et al., 2004).

Dombeck, Williams, and Wood (2004) call for integrated wildfire policies that consider both scientific understanding and social concerns. They propose a continuum of treatments that include active management and fuel reduction in interface zones, alongside the reintroduction of fire in wildlands, to restore ecological balance and reduce future fire risks (Dombeck et al., 2004).

These studies collectively highlight the complex interplay between immediate recovery actions and long-term ecological and social strategies essential for sustainable management of public lands following wildfires.

References: Jacobs, P. et al. (2003). ALPINE FIRES 2003: REHABILITATION AND RECOVERY OF PUBLIC LAND. Beschta, R. et al. (2004). Postfire Management on Forested Public Lands of the Western United States. <https://doi.org/10.1111/j.1523-1739.2004.00495.x> Dombeck, M. P., Williams, J. E., & Wood, C. A. (2004). Wildfire Policy and Public Lands: Integrating Scientific Understanding with Social Concerns across Landscapes. <https://doi.org/10.1111/j.1523-1739.2004.00491.x>

Would you like to delve deeper into any of these studies, or should we proceed with formulating recommendations based on the insights gathered?



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Let's do the recommendations



Based on the analysis of recent fire incidents, FWI data, and insights from the literature, here are tailored recommendations for enhancing public safety and environmental restoration in the Sangre De Cristo Mountains post-wildfire:

1. Immediate Post-Fire Recovery:

- Establish specialized rehabilitation teams immediately after a fire is controlled, as suggested by Jacobs et al. (2003). These teams should focus on stabilizing disturbed soils, managing visitor use, and prioritizing recovery of natural and cultural values.
- Implement containment line rehabilitation and develop recovery plans for different zones within the affected area.

2. Long-Term Ecological and Cultural Recovery Planning:

- Develop and implement a Statewide Ecological and Cultural Recovery Plan that synthesizes individual unit plans. This plan should include asset replacement strategies and prioritize areas for reopening to support recovery in tourism and local economies.
- Engage in community consultation to ensure that recovery efforts align with local needs and values.

3. Sustainable Post-Fire Management Practices:

- Adopt the practices recommended by Beschta et al. (2004), such as retaining large trees, rehabilitating firelines and roads, and planting native species where necessary.
- Avoid practices that impede ecological recovery, such as seeding exotic species, extensive logging, or constructing new roads in sensitive areas.

4. Policy Integration and Community Engagement:

- Develop integrated wildfire policies that address both ecological and social needs, as highlighted by Dombeck et al. (2004). This should include active management of fuel loads in wildland-urban interfaces and reintroduction of controlled burning in less populated areas.
- Foster greater community involvement and responsibility in fire preparedness and recovery processes. Educate the public on the benefits of ecological fire management and the importance of personal and community preparedness.

5. Enhanced Monitoring and Research:

- Implement advanced monitoring systems to track real-time fire behavior and risks, enabling timely responses.
- Support ongoing research into fire ecology and management practices to continually update and refine recovery and prevention strategies based on the latest scientific knowledge.

6. Emergency Services and Infrastructure:

- Assess and enhance the readiness and response capabilities of local emergency services. Ensure adequate resources and training are available for rapid deployment during fire events.
- Improve infrastructure resilience, focusing on critical facilities and evacuation routes to ensure they are robust against future fire threats.

By implementing these recommendations, the Sangre De Cristo Mountains community can improve its preparedness for future wildfires, enhance public safety, and promote the sustainable recovery of its natural environments. Would you like to discuss any specific recommendation in more detail or need assistance with implementation planning?



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