

Los Angeles wildfires

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Summary

Wildfires are a significant and growing concern in the United States, with an average of 70,025 fires burning approximately 7 million acres annually in the past decade. Climate change and increased development in wildland-urban interface areas have exacerbated the frequency and intensity of wildfires, leading to longer fire seasons and more destructive blazes across the country.

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The Los Angeles wildfires erupted unusually in January 2025, driven by a perfect storm of extreme weather and environmental conditions. The first blaze ignited on Tuesday morning, January 7th, in the Pacific Palisades area. Fuelled by strong Santa Ana winds with gusts up to 160 km/h (100 mph), the fire rapidly expanded southward. By Wednesday, January 8, multiple fires had developed, including the Palisades Fire, which grew from 300 acres to nearly 3,000 acres in just hours.

The powerful winds, combined with unusually dry vegetation due to a hot summer and dry winter, allowed the fires to spread swiftly from the inland areas towards the coast, threatening communities from Topanga to the Pacific shoreline.

Skytek utilized thermal satellite imagery to track the development of fire clusters as they progressed. Figure 1 illustrates the primary fire clusters wreaking havoc in the Pacific Palisades, Eaton, and Hurst areas, with red patches indicating heat signatures recorded on January 9th, 2025.



Figure 1 - Thermal capture over Greater Los Angeles area on January 09th, 2025.

The Los Angeles wildfires rapidly escalated since their erupting in the morning of January 7th, 2025. By January 08th, multiple fires had erupted across the region, including the Palisades Fire, Eaton Fire near Pasadena, Hurst Fire in Sylmar, and Woodley Fire in a natural reserve.

As of January 11th, authorities have issued evacuation orders affecting more than 150,000 residents, the area consumed by blazes went over 47,000 acres, with an estimated of 12,000 buildings destroyed and 57,000 structures still under threat.

In response to the rapidly evolving Los Angeles wildfires, Skytek deployed its cutting-edge technology to provide critical support and analysis. Utilizing high-resolution imagery systems and proprietary machine learning algorithms, Skytek's team implemented advanced damage detection and mapping capabilities to support tracking of the fire's progression, precise mapping of affected properties and environmental damage, and rapid quantification of losses.

Skytek depicted in Figure 2 an overview of the Pacific Palisades acquired just before the wildfires, and in Figure 3, the post event imagery of the same area, with a damage layer overlaid after the imagery has been processed and analysed for fire related damage.



Figure 2 - Satellite imagery of Pacific Palisades on December 01st, 2024.



Figure 3 - Satellite imagery of Pacific Palisades on January 11th, 2025.

Skytek provides two views to support damage assessment

- Macro level: To detect damage over large areas, e.g. city region
- Micro Level: Each property included in the change detection algorithm has a support pre/post image

Macro level:

The damage detection algorithm analyses pre- and post-wildfire imagery to identify property boundaries and generate a damage layer that highlights clusters of affected properties across the entire area of interest. In the Greater Los Angeles area, the Palisades suffered the most significant impact, with approximately 24,000 acres burned, over 5,300 structures destroyed, and an estimated total market value of the damaged properties exceeding \$70 billion. Figure 4 illustrates the distribution of damage by category, as identified by Skytek's proprietary machine learning algorithm after analysing more than 8,550 structures in the Palisades.

Damage Category	Damage Range	Number of properties	Property Damage %
Red	76% - 100%	1870	21.90%
Orange	26% - 75%	230	2.69%
Green	0% - 25%	6439	75.41%

Figure 4 - Damage categories for the analysed structures in Pacific Palisades

MICRO LEVEL: Individual Properties

Each of the 8,550 analysed properties included above has its own individual pre/post imagery and damage assessment.

The damage score is listed granularly, with each property identified by its coordinates and address. The results of the damage detection model can be visualised in a table, as shown for a sample list of properties in Figure 5 below.

ID	Address	Lat	Long	Damage %	Damage Category
1	1601 San Onofre Dr, Pacific Palisades, CA 90272, USA	34°03'43.7"N	118°30'17.5"W	100.00%	Red
2	1790 Alta Mura Rd, Pacific Palisades, CA 90272, USA	34°03'46.5"N	34°03'46.5"W	98.57%	Red
3	16848 Monte Hermoso Dr, Pacific Palisades, CA 90272, USA	34.0719° N	-118.5545° W	100.00%	Red
4	15777 Bowdoin St, Pacific Palisades, CA 90272, USA	34.0478° N	-118.5313° W	5.20%	Red
5	15308 Sunset Blvd, Pacific Palisades, CA 90272, USA	34.0473° N	-118.5263° W	98.57%	Red
6	16940 Sunset Blvd, Pacific Palisades, CA 90272, USA	34.0420° N	-118.5474° W	100.00%	Red
7	1842 Palisades Dr, Pacific Palisades, CA 90272, USA	34.0750° N	-118.5588° W	100.00%	Red
8	17026 Avenida De Santa Ynez, Pacific Palisades, CA 90272, USA	34.0726° N	-118.5586° W	100.00%	Red
9	17137 Avenida De Santa Ynez, Pacific Palisades, CA 90272, USA	34.0699° N	-118.5592° W	0.00%	Green
10	1273 Palisades Dr, Pacific Palisades, CA 90272, USA	34.0697° N	-118.5617° W	100.00%	Red
11	1142 Las Pulgas Rd, Pacific Palisades, CA 90272, USA	34.0527° N	-118.5382° W	77.95%	Red
12	1170 Galloway St, Pacific Palisades, CA 90272, USA	34.0513° N	-118.5218° W	100.00%	Red
13	14400 Villa Woods Pl, Pacific Palisades, CA 90272, USA	34.0520° N	-118.5137° W	100.00%	Red
14	18125 Coastline Dr, Malibu, CA 90265, USA	34.0434° N	-118.5707° W	94.06%	Red
15	15120 Sunset Blvd, Pacific Palisades, CA 90272, USA	34.0447° N	-118.5241° W	75.28%	Red
16	111 Marquez Pl, Pacific Palisades, CA 90272, USA	34.0412° N	-118.5489° W	100.00%	Red
17	17002 Sunset Blvd, Pacific Palisades, CA 90272, USA	34.0410° N	-118.5505° W	100.00%	Red
18	16801 Pacific Coast Hwy, Pacific Palisades, CA 90272, USA	34.0404° N	-118.5455° W	0.00%	Red
19	14800 W Pampas Ricas Blvd, Pacific Palisades, CA 90272, USA	34.0407° N	-118.5185° W	100.00%	Red
20	14820 W Pampas Ricas Blvd, Pacific Palisades, CA 90272, USA	34.0406° N	-118.5188° W	0.00%	Green
21	603 Hightree Rd, Santa Monica, CA 90402, USA	34.0380° N	-118.5169° W	0.00%	Green
22	15200 W Friends St, Pacific Palisades, CA 90272, USA	34.0337° N	-118.5273° W	100.00%	Red

Figure 5 - Sample of tabular listing of the damage detection for Palisades properties



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